SEASIDE TV

DCT 2000

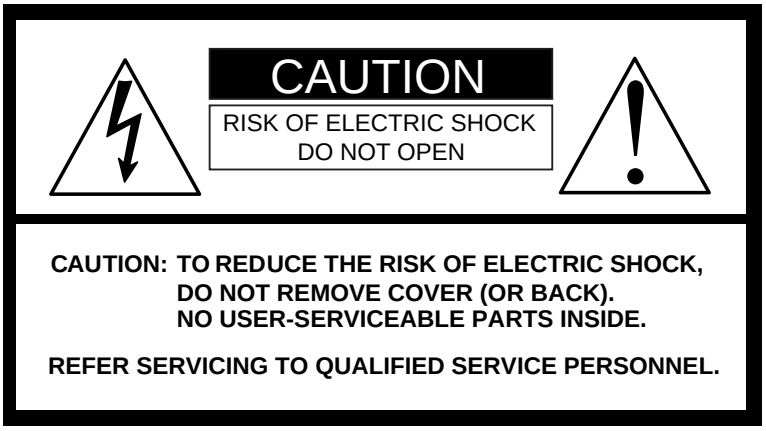
Wiring Instructions

Additional Information

Digital Cable Box

USER MANUAL

Seaside communications


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

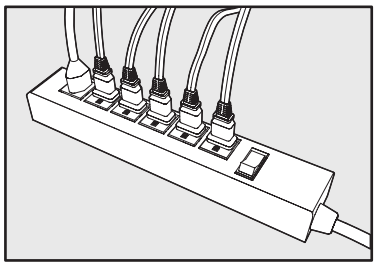
Graphical Symbols and supplemental warning marking locations on bottom of terminal.

WARNING

TO REDUCE THE RISK OF FIRE OR SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION

TO PREVENT ELECTRICAL SHOCK, DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE, OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point, within an equilateral triangle, is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

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Section 1

Introduction

The Motorola DCT 2000 is an analog/digital terminal designed to support 64 and 256 QAM digital signal formats, and it can be configured to support analog descrambling.

The DCT 2000 is compatible with existing Motorola analog and digital set-top terminal products. Existing set-top terminals are not affected by the new data flowing from the system to the DCT 2000s.

This manual provides instructions to install the DCT 2000.

Features and Options

The Motorola DCT 2000 offers the following standard features:

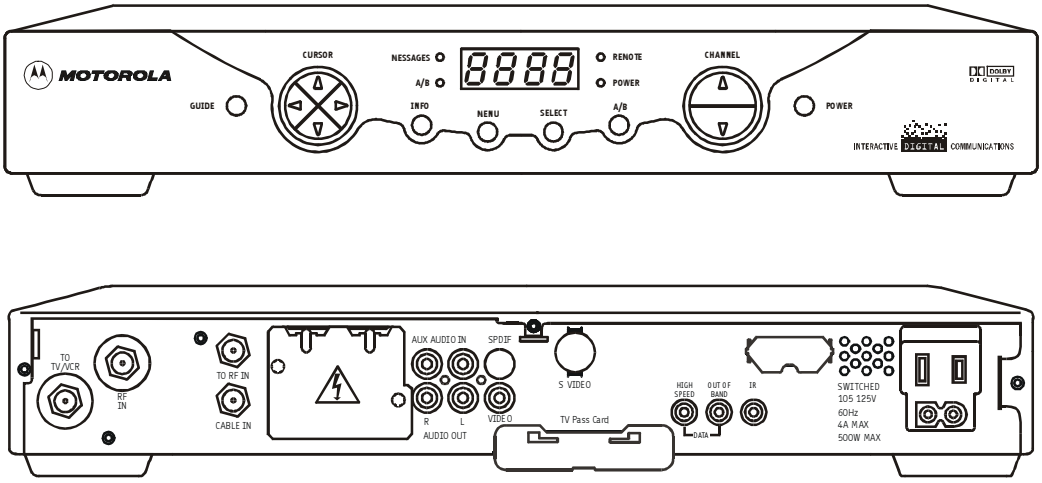
- 54 through 860 MHz integrated tuner
- Integrated RF return (using built-in STARVUE II module)
- RF and baseband audio/ video ports
- Single high/low power IR Blaster port (replaces two connectors on DCT 1000/1200 series)
- High/low speed data output ports
- Auxiliary audio input
- Switched accessory outlet

Optional features include:

- STARFONE II (14.4 kbps) Telco return
- A/B In switch
- RF Bypass switch
- Dual A/B-RF Bypass switch
- IR Blaster modules
- Serial data port
- S-Video
- Dolby® AC-3® output (SPDIF Interface)

Figure 1-1 illustrates front and rear views of the DCT 2000:

Figure 1-1
DCT 2000 advanced set-top terminal



Using This Manual

This manual provides instructions to install and configure a DCT 2000:

Section 1	**Introduction** provides a product description, a list of related documentation, the technical helpline telephone number, and the repair/return procedure.
Section 2	**Overview** describes the DCT 2000 terminal and provides an overview of its use. This section also identifies the front-panel displays and switches and describes the rear-panel features.
Section 3	**Installation** provides instructions on how to install the DCT 2000 in a subscriber location and perform operational tests.
Section 4	**Adding the IR Blaster Option** provides instructions on how to install the IR Blaster option for controlling VCR recording through the DCT 2000.
Section 5	**Troubleshooting** provides guidelines for troubleshooting the equipment.
Appendix A	**Specifications** provide the technical specifications for the DCT 2000.
Appendix B	**Diagnostics** provide instructions on accessing and interpreting the built-in diagnostics.
Abbreviations and Acronyms	The **Abbreviations and Acronyms** list contains the full spelling of the short forms used in this manual.

Related Documentation

Separate instruction manuals are available for associated components.

- *Seaside Remote Control User Guide*

If You Need Help

If you need assistance while working with the DCT 2000
see next page.

Calling for repairs

If our digital cable box is not working correctly, call Seaside Communications:
539-6250 Monday thru Friday 8:30am - 5:30pm

Section 2

Overview

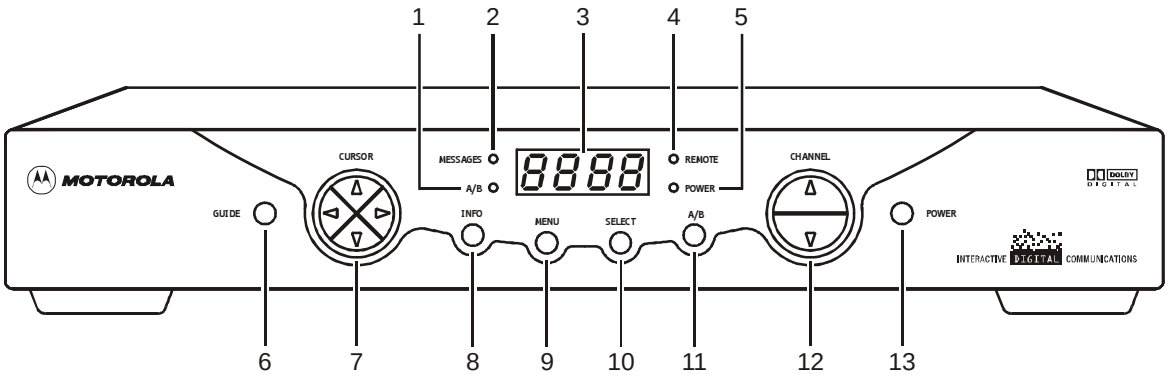
The DCT 2000 uses state-of-the-art digital compression technology to provide new revenue generating services. The DCT 2000 can be configured to support real time reverse path communications, providing a gateway to interactive services such as Video on Demand (VOD), Internet access, Email, home shopping, and more.

This section provides illustrations and tables showing the DCT 2000 controls, displays and connectors. Before you begin to install the DCT 2000, familiarize yourself with the various controls and displays.

Front Panel

Figure 2-1 illustrates the front panel, which contains selection keys, tuning keys, various displays, and the power switch:

Figure 2-1
DCT 2000 front panel



These controls provide minimum, yet functional capability in the event the remote control is lost or temporarily out of service. Functions requiring a numeric entry are not available without a remote control.

Table 2-1 describes the front-panel controls and LEDs:

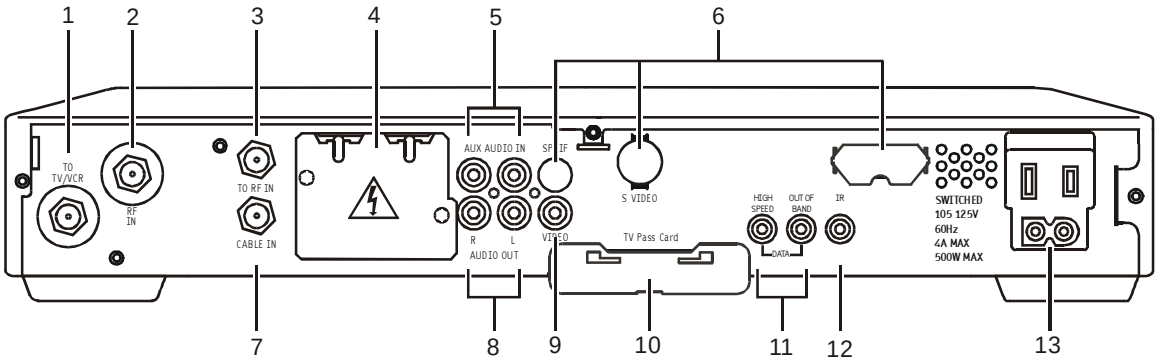
Table 2-1
Front panel

Key	Feature	Function
1	A/B	Lights if optional switch is activated
2	MESSAGES	Lights to indicate that a message is present
3		Normally displays current channel number or time of day; in the diagnostic mode, displays diagnostic codes
4	REMOTE	Flashes when an error-free signal is received from the remote control
5	POWER	Lights when the unit is on
6	GUIDE	Displays the electronic program guide (EPG)
7	CURSOR	Moves the cursor in menu and program guide screens
8	INFO	Displays current channel and program information
9	MENU	Displays the Main menu
10	SELECT	Selects function options and Pay-Per-View (PPV) events and tunes channels from the electronic program guide
11	A/B	When enabled, this switches an add-on module from one function to another function
12	CHANNEL	Changes channel up and down
13	POWER	Turns DCT 2000 on/off

Rear Panel

Figure 2-2 illustrates the rear panel of the DCT 2000 which contains a switched power outlet; connectors for video, audio, and RF cabling; data output connectors; and IR Blaster output connector:

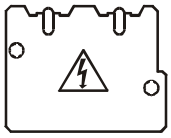
Figure 2-2
DCT 2000 rear panel

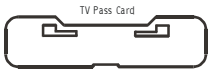
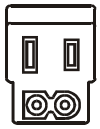


A protective plate covers the rear panel opening when the optional Telco return is not installed. Do not remove the protective plate unless you are installing new hardware in the opening.

Table 2-2 describes each of the rear-panel features:

Table 2-2
Rear panel

Key	Item	Function
1		F-type connector used to connect the DCT 2000 to a standard TV or VCR
2		F-type connector used for DCT 2000 input from the TO RF IN connector
3		F-type connector used to connect the TO RF IN port to the RF IN port (output from integrated RF return)
4		Covers slot used for STARFONE option
5		RCA jacks for looping through audio from auxiliary audio equipment
6		Options that enhance your DCT 2000; see, “Options” for more information
7		F-type connector used for the coaxial cable input port from plant (input to integrated RF return)

Key	Item	Function
8		Left and right audio RCA jacks used for stereo audio output
9		RCA jack used to connect the DCT 2000 to a composite (baseband) video TV or a monitor; in some configurations this jack connects to a VCR
10		Cover for an area reserved for future use
11		Mini-phone jacks for connecting data output from the DCT 2000
12		Mini-phone jack for connecting an optional IR Blaster
13		AC power outlet that can be configured as a switched or unswitched outlet and the two-pronged plug is for attaching a power cord

Options

The DCT 2000 supports a variety of options enabling your company to offer a system tailored to the individual needs of your subscribers. Figure 2-3 illustrates the options available for the DCT 2000:

Figure 2-3
DCT 2000 options

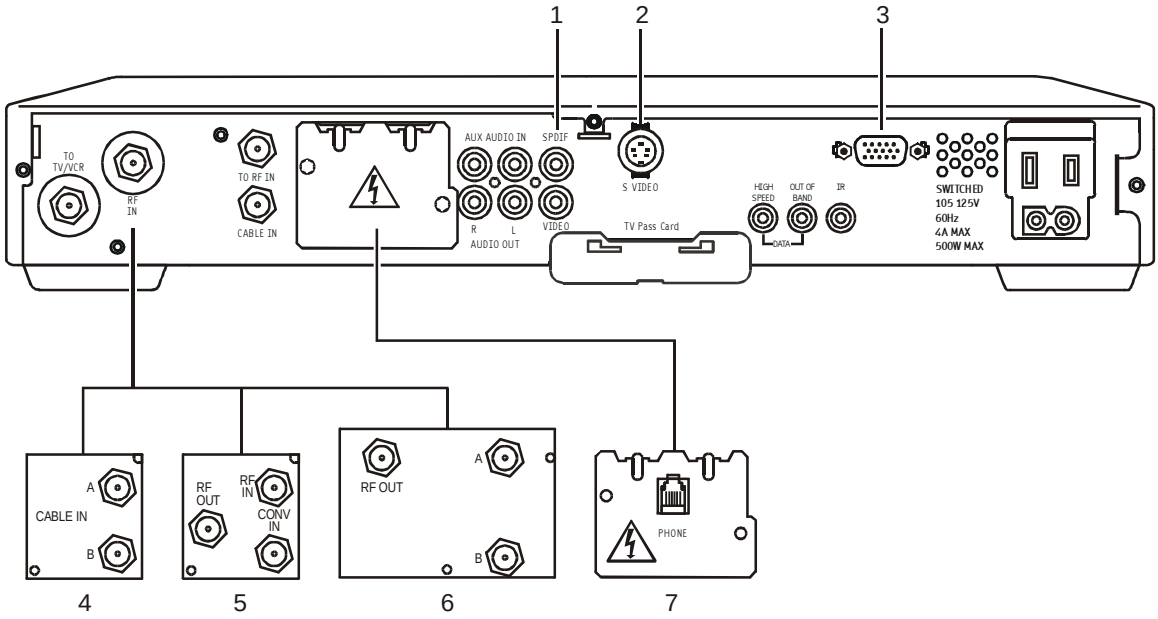
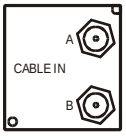
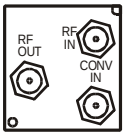
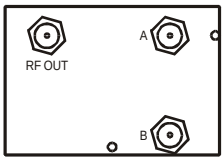
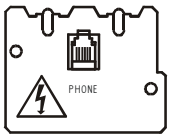


Table 2-3 describes the function of each of the options shown in Figure 2-3:

Table 2-3
Options

Key	Option	Name	Function
1		**SPDIF**	Used to deliver Dolby Digital 5.1, Dolby AC3 audio, or PCM audio (digital audio recording)
2		**S-VIDEO**	Used for high quality video to external devices such as high-end VCRs or TVs
3		**PARALLEL PORT**	Interface this serial data connector to an external data device such as a printer
4		**A/B In**	Used in a dual cable system to receive both cables; verify the location of the A and B connectors on your particular A/B In module
5		**RF Bypass**	Enables the cable signal to bypass the DCT 2000 and go directly to a TV or VCR
6		**Dual A/B RF Bypass**	Used in a dual cable system; enables the cable signal on the current side (A or B) to go directly to a TV or VCR
7		**STARFONE**	Used in a two-way addressable system to send Impulse Pay-Per-View (IPPV) information to the DAC 6000 or other controller through the subscriber's telephone hookup

Remote Controls

The basic DCT 2000 uses the Seaside remote control. If your system offers optional interactive applications, such as an interactive program guide, a different remote control may be required. The application provider should supply user instructions for each interactive application.

Seaside Remote Control

Figure 2-4 illustrates the Remote:

Figure 2-4
SEASIDE remote control

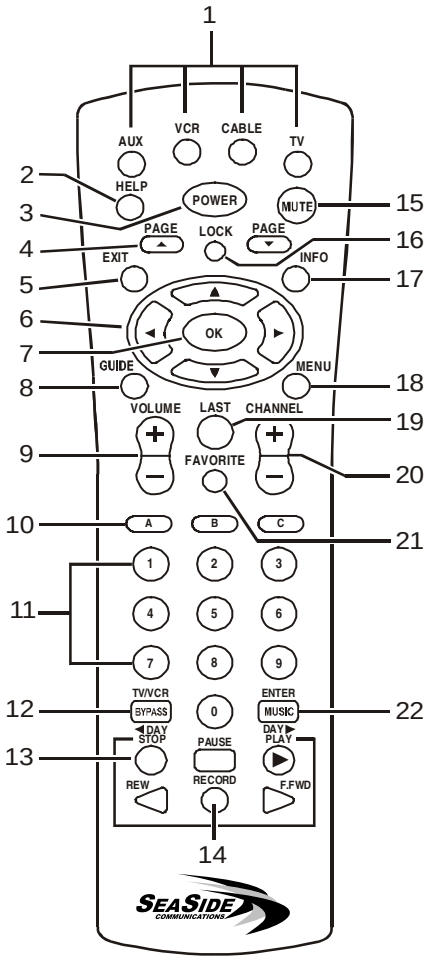
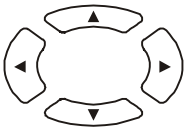


Table 2-4 describes the remote control keys:

Table 4
Remote control keys

Key	Item	Description
1	AUX, VCR, CABLE, or TV	Selects a desired device to control. The selected mode will remain active until you press another key.
2	HELP	Displays the help screen.
3	POWER	Turns the selected home entertainment component on or off.
4	PAGE ▲ or PAGE▼	Pages through menu screens and the program guide.
5	EXIT	Exits a menu or program guide.
6		Moves the cursor around the program guide and menu screens.
7	OK/SELECT	Selects menu options, Pay-Per-View events or tune programs from the program guide. Your remote may only have OK; this key still performs the same functions.
8	GUIDE	Displays the program guide.
9	VOLUME + or VOLUME -	Increases or decreases the volume of the currently selected device.
10	A, B , or C	Functionality is determined from services offered by the service provider.
11	NUMBER KEYS	Directly selects a channel.
12	TV/VCR BYPASS	Enables the RF bypass function. A cable-ready TV is required for this function to operate.
13	◄ Day Day ►	Moves the program guide ahead or back 24 hours.
14	STOP, PAUSE, PLAY, REW, RECORD, F.FWD	Controls the VCR.
15	MUTE	Toggles the sound on and off.
16	LOCK/PPV	Limits viewing of selected programs; and is used to view the Pay-Per-View menu. Your remote may have only LOCK; this key still performs the same functions.
17	INFO	Displays the current channel and program information (not supported by all applications).
18	MENU	Displays the Main menu.
19	LAST	Recalls the last channel or goes back one screen in the menu.
20	CHANNEL + or -	Changes the channels by moving up or down.
21	FAVORITE	Displays preset favorite cable channels.
22	ENTER/MUSIC	Displays digital music channel menus. On some TV models, press to enter channels.

Installing Batteries in Remote Control

Before using the remote control, you must install two AA (1.5 V) alkaline batteries. Figure 2-5 illustrates battery access on the back of the remote control.

To install batteries in an DRC 400:

1 Press and slide the battery compartment cover off.

2 Place the batteries in the compartment; be careful to observe the correct polarity.

3 Slide the battery compartment cover back into place.

Battery installation will vary with each style of remote control. Refer to the user instructions included with your remote control for installing batteries.

Figure 2-5
Back view of remote control

Section 3

Installation

This section provides instructions for installing and cabling the DCT 2000. To complete the installation, you must:

- Connect the cables
- Supply power to equipment
- Download configuration information and software
- Run operational check and diagnostics

Before You Begin

Before you begin, review the installation instructions, gather the required items, and complete the tasks listed below:

- Determine if the subscriber's system requirements include an A/B In, RF Bypass, Dual A/B-RF Bypass module, or a STARFONE module. These options can be installed before leaving the office. Installation instructions are provided with these modules.
- Verify that you have 75-ohm coaxial cables with F-type connectors and RCA baseband phonotype cables.
- Determine if you are connecting the DCT 2000 to a standard TV or a composite (baseband) monitor.
- Place the DCT 2000 on a smooth, flat surface and remove any obstructions that could interfere with the free flow of air over, under, or around it. Advise the subscriber not to place anything on top of the unit.

Installing the DCT 2000

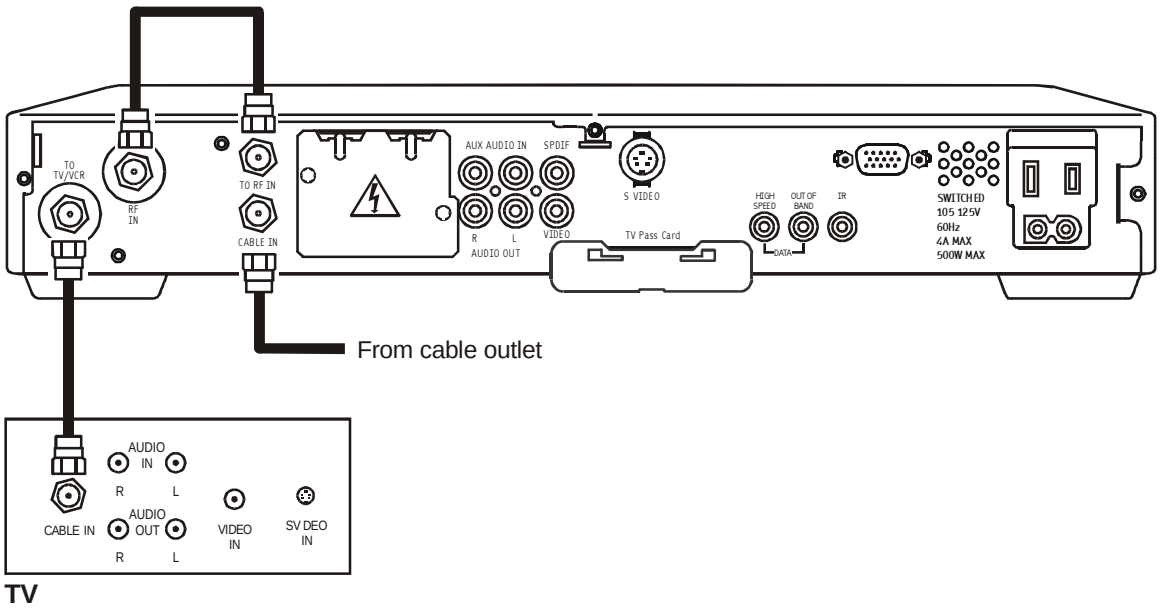
To install the DCT 2000:

1. If an add-on module is required and it was not previously installed, do that now. When installed, verify that the appropriate configuration information has been downloaded via the access control system.
2. Determine if you are connecting the DCT 2000 to a conventional TV or to a monitor. To install the video connection:
   - For a conventional TV, use a 75-ohm coaxial cable with F-type connectors.
   - For a monitor, use an RCA phono cable to connect the VIDEO connector to the monitor.
3. Locate the cabling diagram that matches the subscriber's configuration requirement.
4. Connect the cables as illustrated in the diagram.
5. Perform the basic operational check in this section after the DCT 2000 is installed.

Standard Cabling Diagram

The DCT 2000 will output on either channel 3 or 4 depending on the configuration message from the control system. Figure 3-1 illustrates a standard diagram connecting the DCT 2000 to a TV using RF connectors:

Figure 3-1
Standard cabling

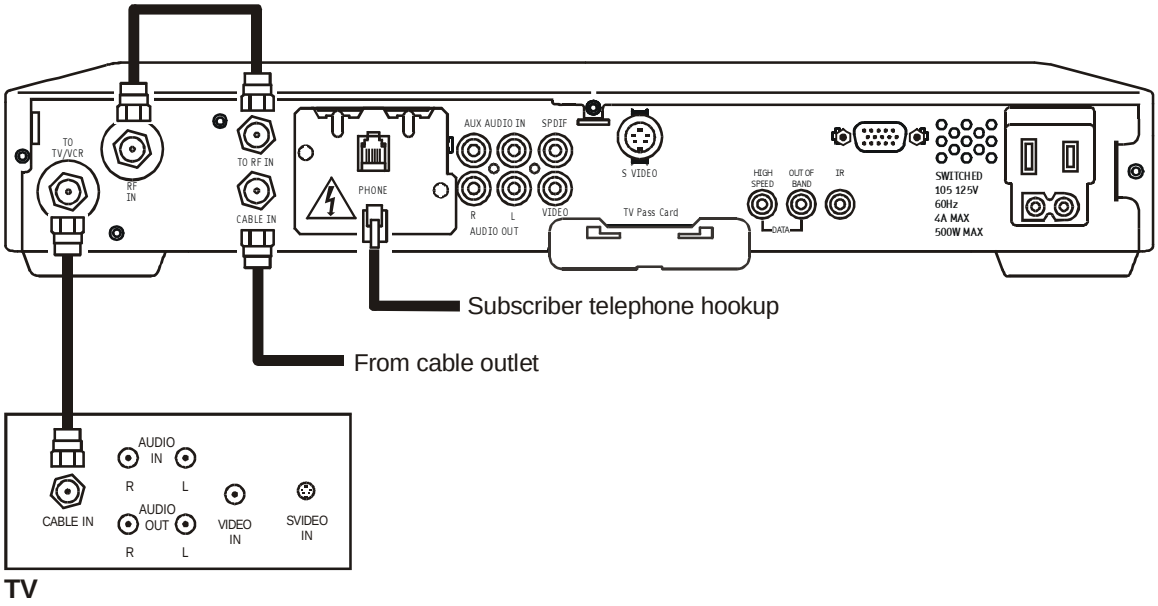


The remodulated channel, 3 or 4, does not carry stereo for digital channels. Connect the DCT 2000 using RCA baseband connectors to receive stereo on digital channels. These connections are illustrated later in this section.

STARFONE module cabling diagram

Figure 3-2 illustrates the RF wiring diagram for the DCT 2000 when it has a telephone return modem:

Figure 3-2
Standard wiring with a STARFONE module

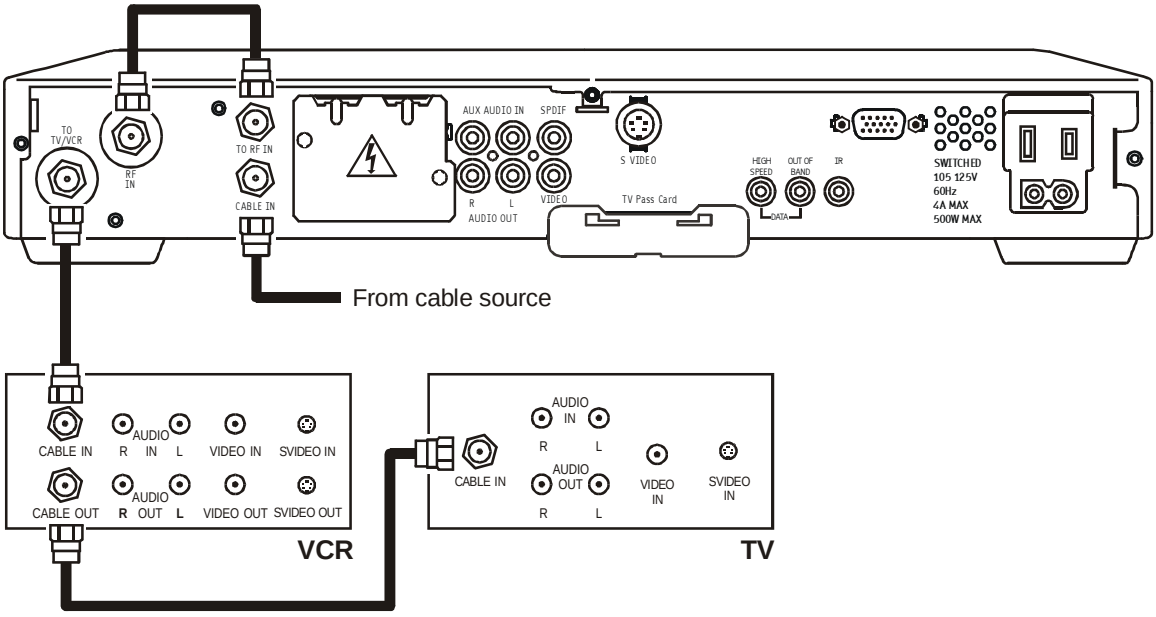


For service providers planning to implement RF return capabilities, it is recommended the DCT 2000 be wired for both the STARFONE telephone return and the integrated STARVUE RF return. This enables the operator to move the DCT 2000 into a two-way RF return without rewiring the DCT 2000 later.

Standard VCR Cabling Diagram

Figure 3-3 illustrates the basic cabling diagram that enables you to record the channel being viewed:

Figure 3-3
Standard VCR cabling



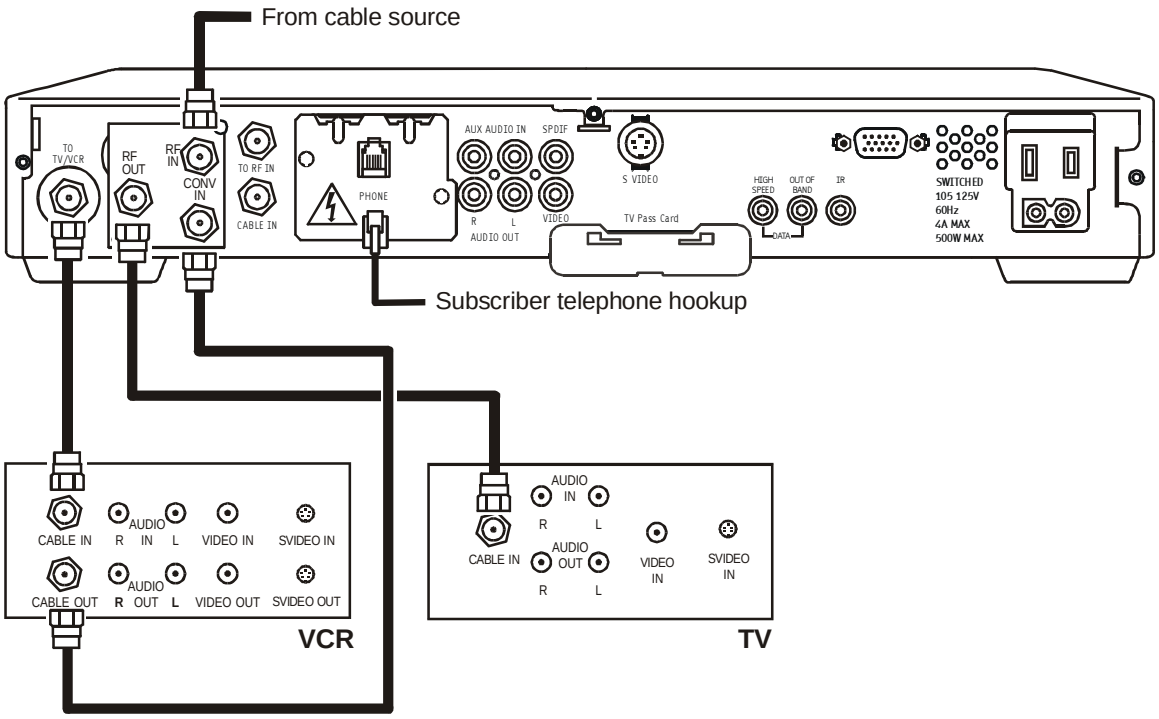
The remodulated channel, 3 or 4 does not carry stereo for digital channels. Connect the DCT 2000 using RCA baseband connectors to receive stereo on digital channels. These connections are illustrated later in this section.

RF Bypass Switch VCR Cabling Diagrams

Proper operation of the RF Bypass feature requires special configuration in the control system and in the EPG settings.

The STARFONE return module is used in a one-way addressable system to send information to the controller through the subscriber's telephone hookup. Figure 3-4 illustrates the cabling diagram that enables viewing an unscrambled analog channel on TV while recording another channel through the DCT 2000:

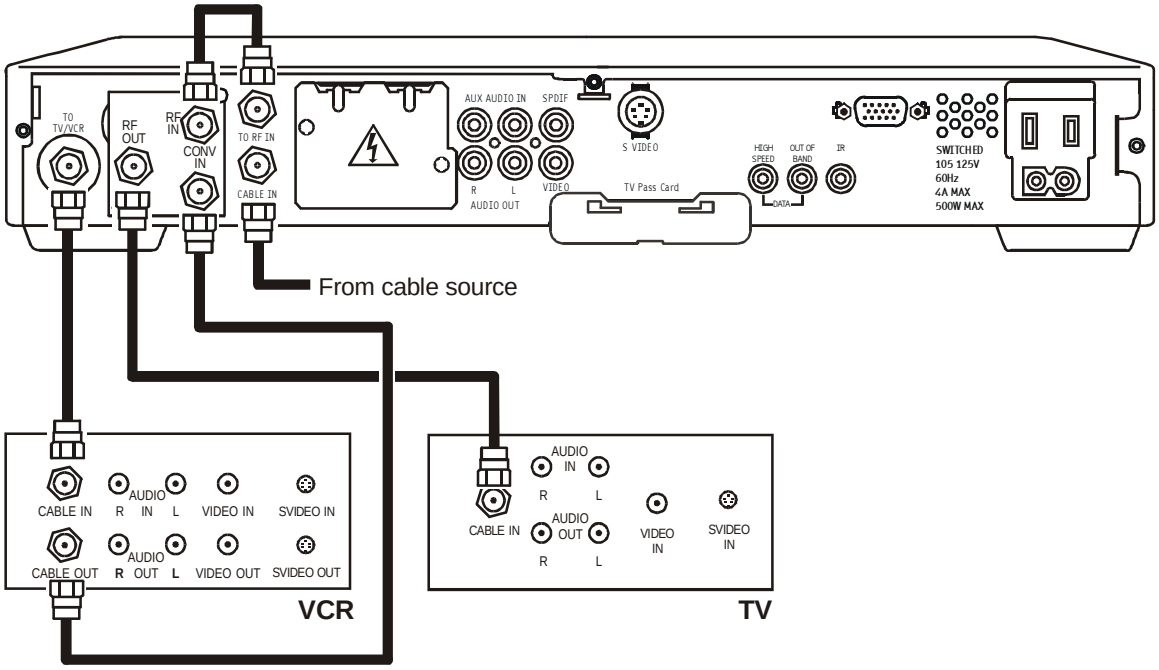
Figure 3-4
RF Bypass switch with VCR (STARFONE return module installed)



If the operator plans to implement two-way RF return functionality in the future, the installer should use the integrated STARVUE RF return.

Figure 3-5 illustrates the cabling diagram that uses the RF return and enables viewing of an unscrambled analog channel on TV while recording another channel through the DCT 2000:

Figure 3-5
Cabling with RF Bypass module (using RF return)



A/B In Module Cabling Diagrams

The A/B In module is commonly used in dual-cable systems. Figure 3-6 illustrates a DCT 2000 that is equipped with a STARFONE module:

Figure 3-6
A/B In module with a STARFONE module

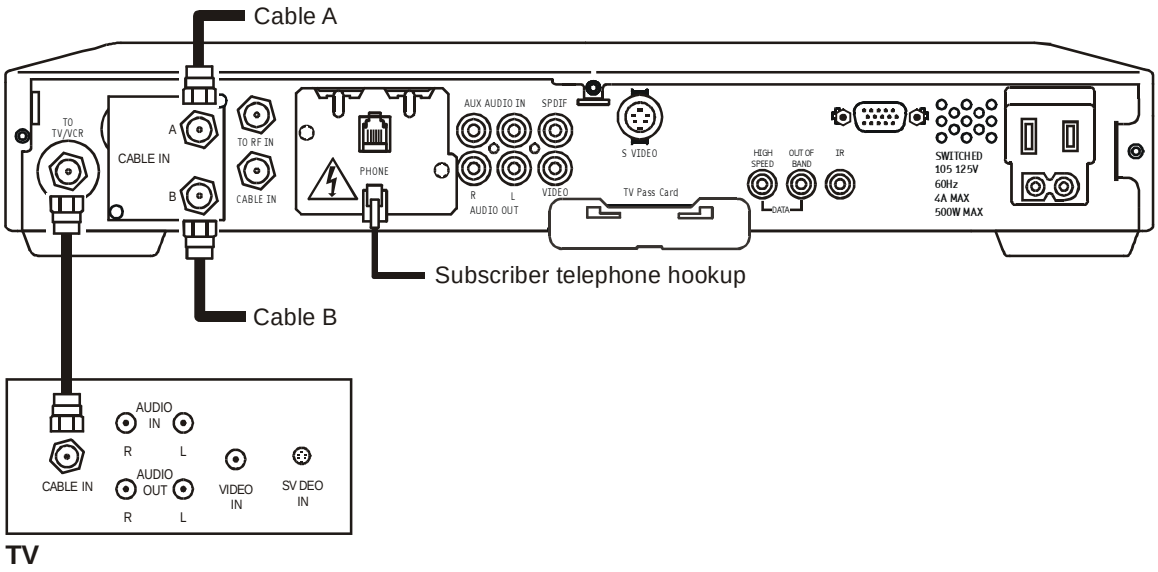


Figure 3-7 illustrates a DCT 2000 with the return on Cable A:

Figure 3-7
A/B In module with return on Cable A

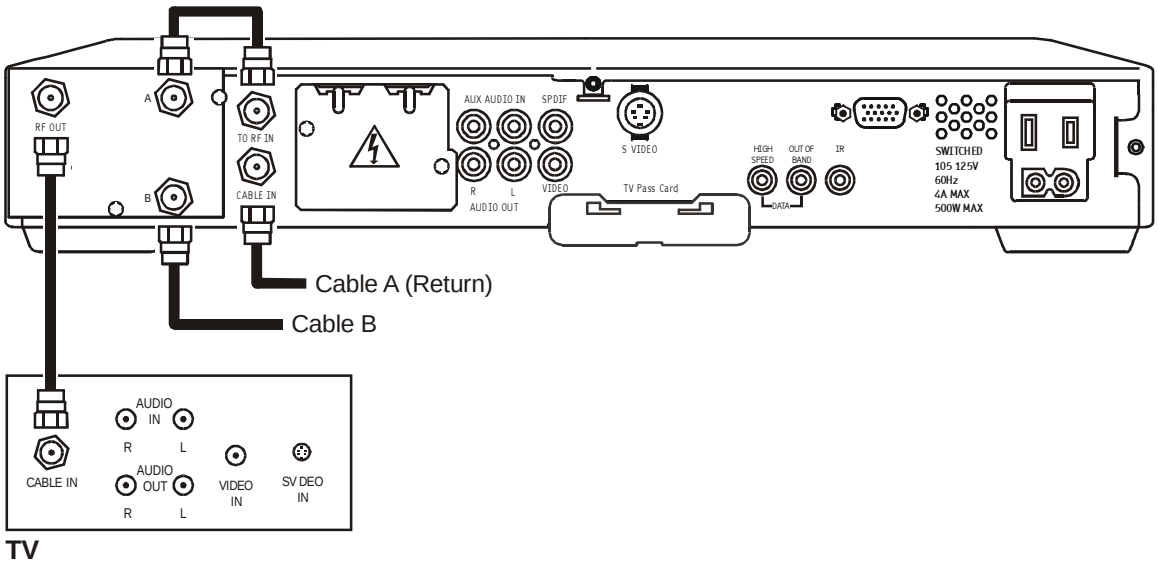
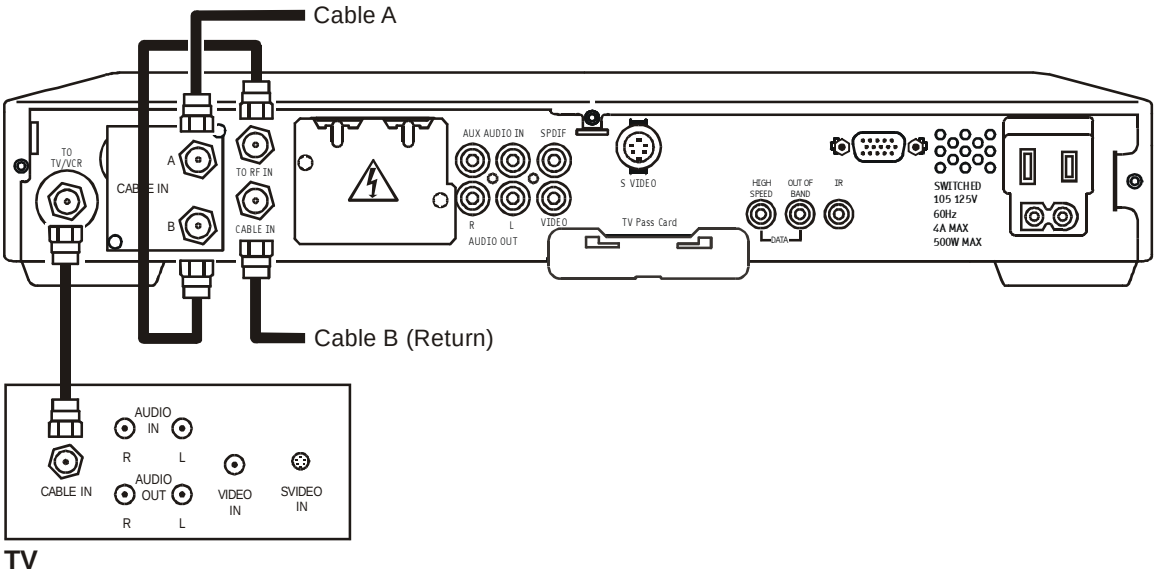


Figure 3-8 illustrates a DCT 2000 when the return is on Cable B:

Figure 3-8
A/B In module with return on Cable B



Dual A/B-RF Bypass Module Cabling Diagrams

The Dual A/B-RF Bypass module is commonly used in dual-cable systems. Both Cable A and Cable B are cable signals coming from the service provider. The service provider determines which source will be the return cable. Choose the cabling diagram that matches the return configuration you need.

The Dual A/B cable system using a STARFONE module utilizes the telephone modem as the return path to the service provider. Figure 3-9 illustrates a DCT 2000 with a STARFONE module:

Figure 3-9
Return on STARFONE module

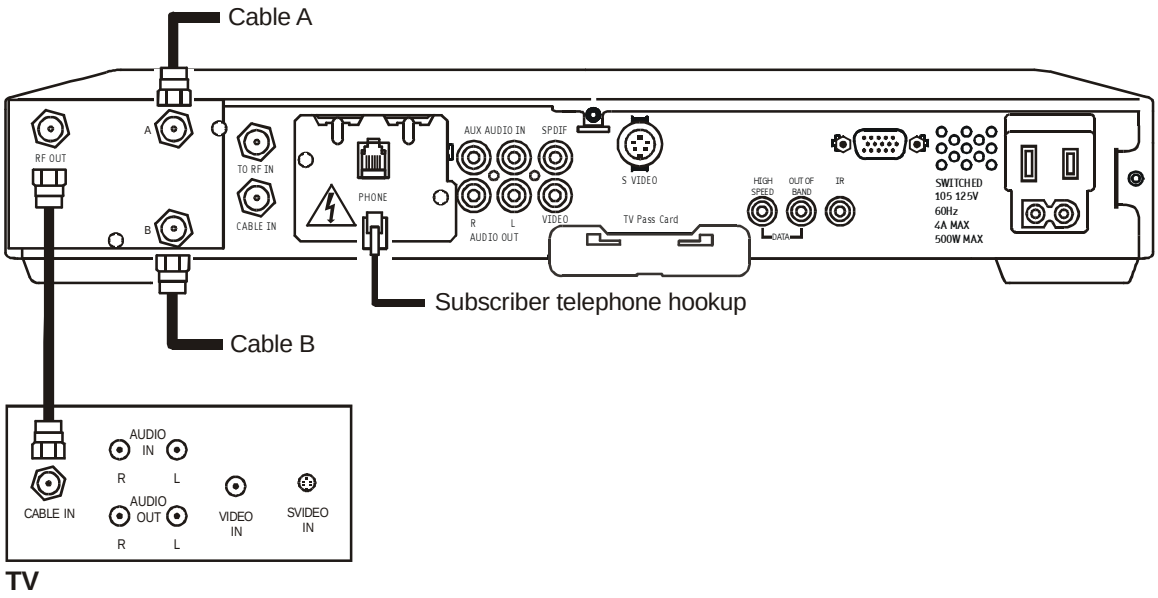


Figure 3-10 illustrates a DCT 2000 with the Dual A/B RF Bypass module when the return is on Cable A:

Figure 3-10
Return on Cable A

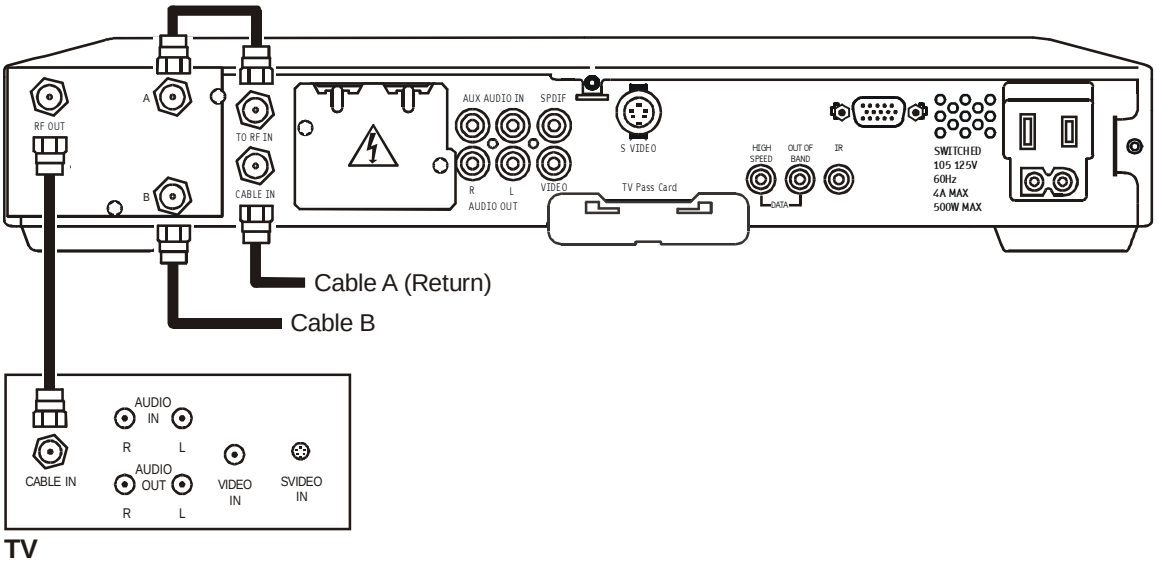
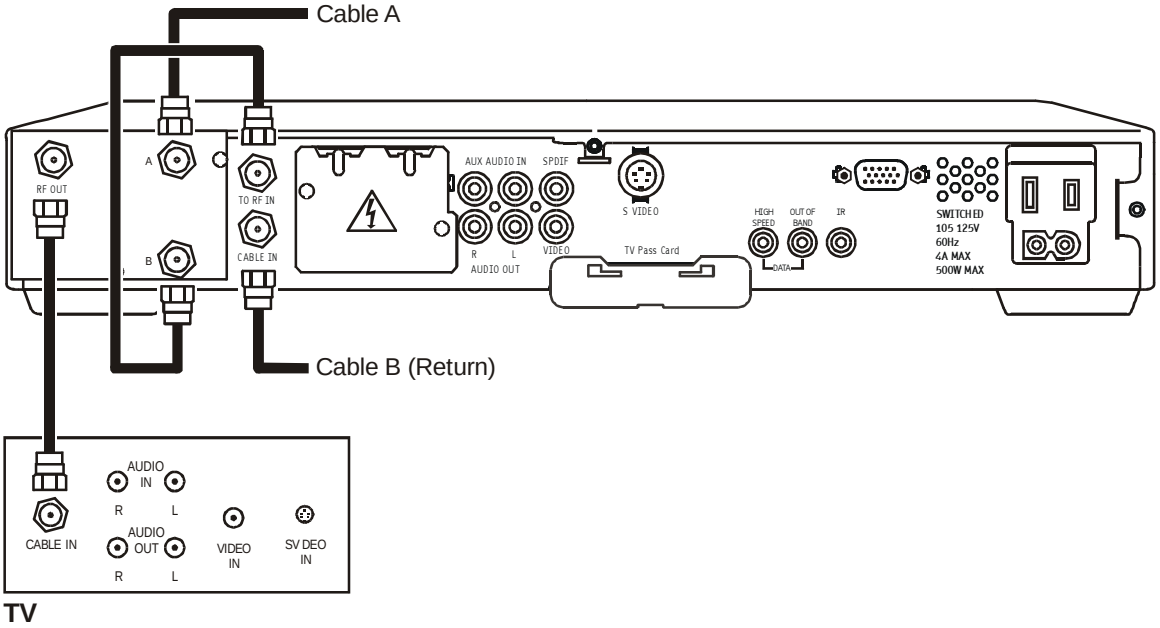


Figure 3-11 illustrates a DCT 2000 with a Dual A/B RF Bypass module when the return is on Cable B:

Figure 3-11
Return on Cable B

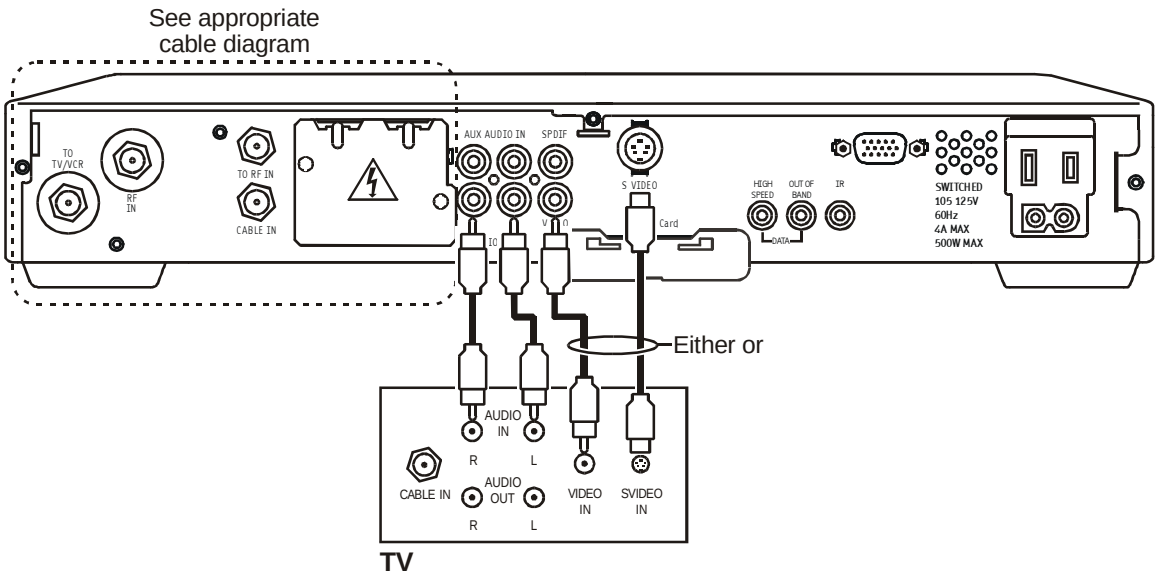


Composite Baseband and S-Video Cabling Diagrams

Connecting the DCT 2000 using the baseband RCA type outputs enables the subscriber to experience stereo and Dolby Surround® sound on digital channels when available.

Figure 3-12 illustrates the standard baseband audio and video outputs of the DCT 2000:

Figure 3-12
Standard baseband cabling

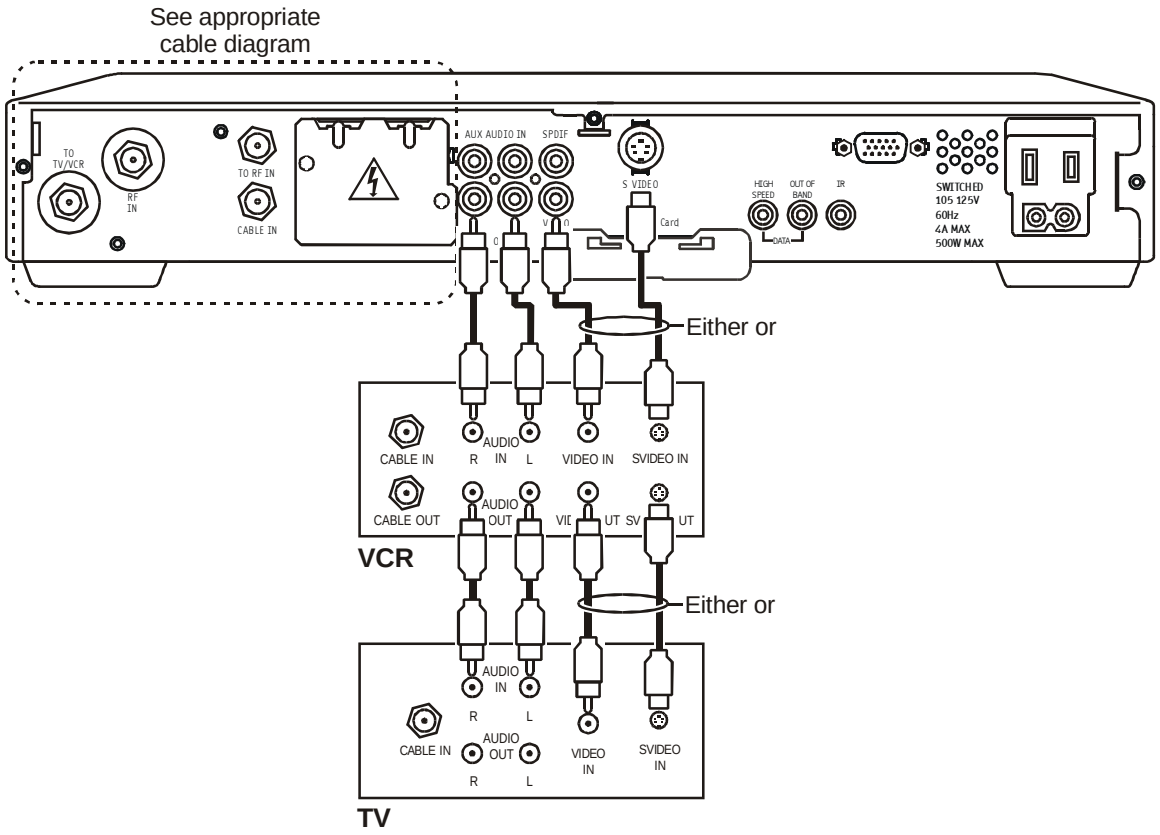


The S-Video connector is part of the Home Theatre option and is not included on all DCT 2000s.

When connecting the video path, never connect baseband composite video and S-Video together. Because some entertainment equipment will not support both video inputs simultaneously, use only one connection path.

Figure 3-13 illustrates the baseband audio and video outputs of the DCT 2000 that are available to connect to a VCR:

Figure 3-13
Composite VCR cabling

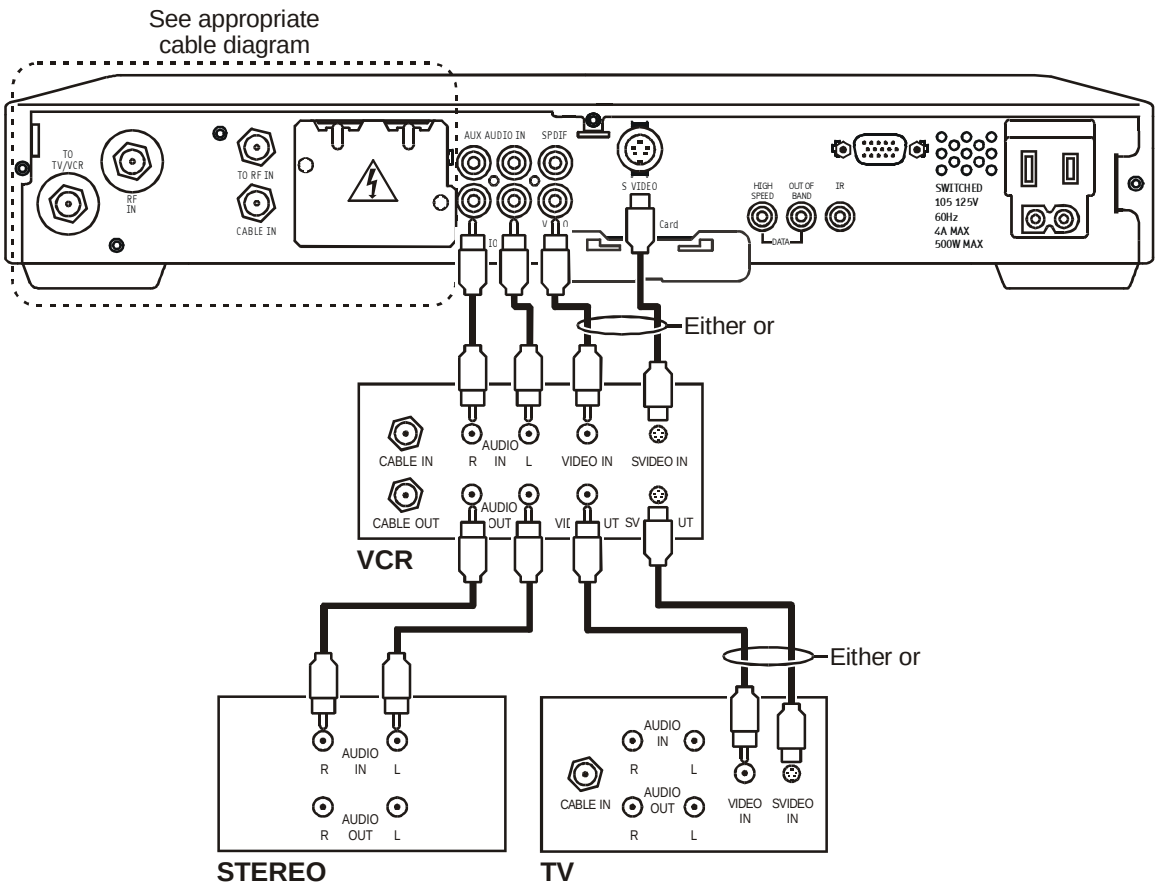


When connecting the video path, never connect baseband composite video and S-Video together. Because some entertainment equipment will not support both video inputs simultaneously, use only one connection path.

Stereo Cabling Diagram (Baseband)

This audio configuration does not provide for a TV playing through the stereo. Figure 3-14 illustrates how to connect the DCT 2000 to a stereo using the audio connectors on the VCR:

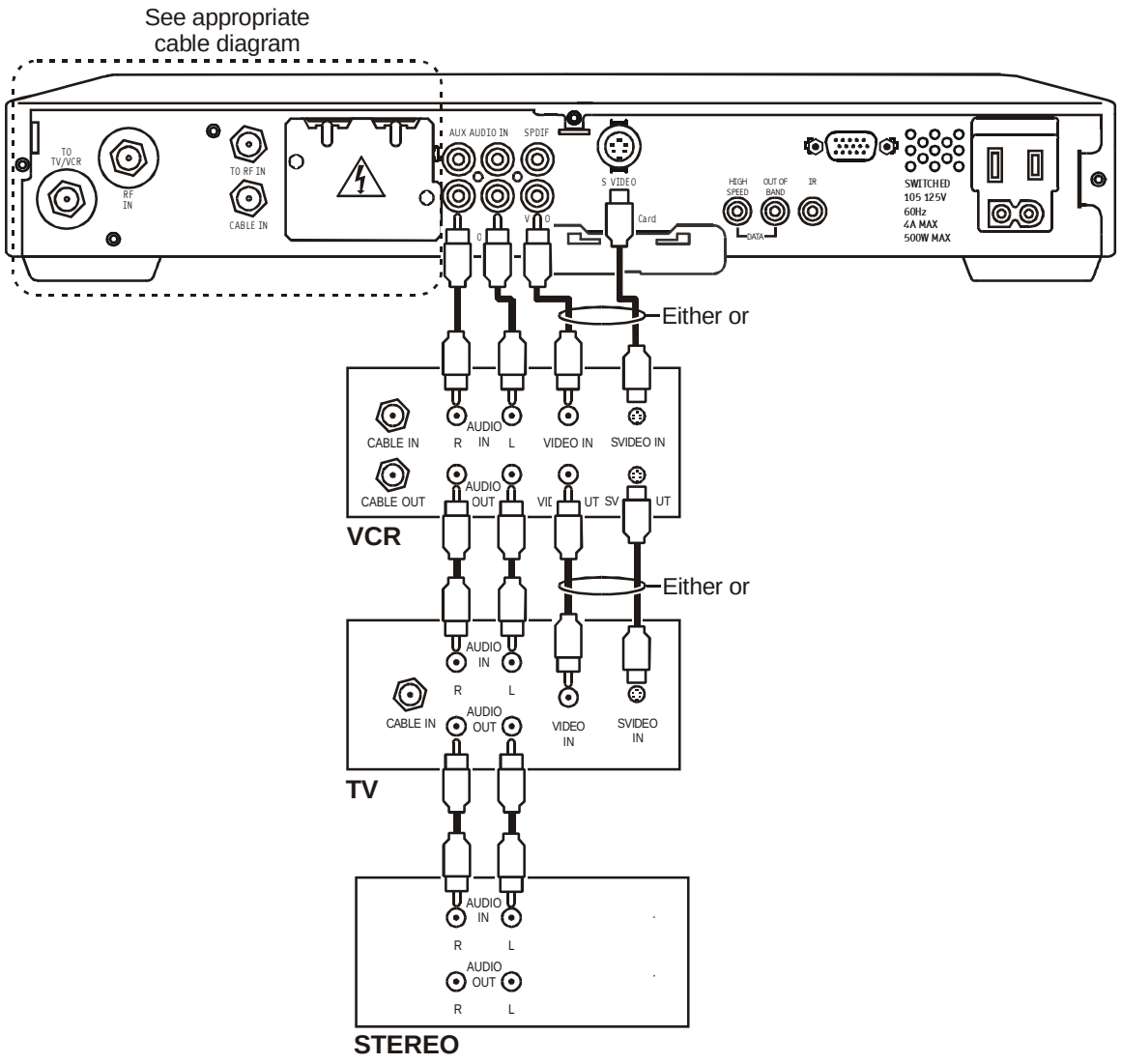
Figure 3-14
Audio on the VCR



When connecting the video path, never connect baseband composite video and S-Video together. Because some entertainment equipment will not support both video inputs simultaneously, use only one connection path.

This audio configuration enables the TV to play through the stereo. Figure 3-15 shows how to connect the DCT 2000 to a stereo using the audio loop-through connectors on the VCR and the audio output ports on the TV monitor:

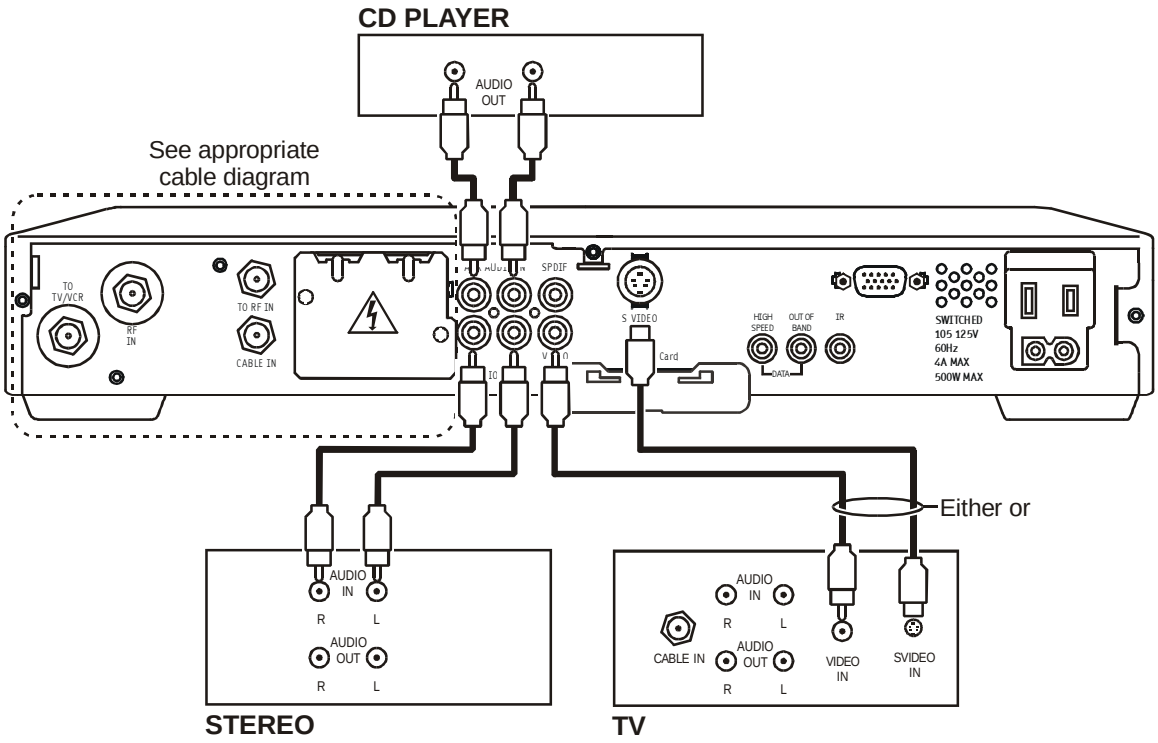
Figure 3-15
Audio on VCR/audio output on TV



When connecting the video path, never connect baseband composite video and S-Video together. Because some entertainment equipment will not support both video inputs simultaneously, use only one connection path.

When all of the RCA audio connectors on the back of the stereo receiver are used, the DCT 2000 enables audio to pass through an external device such as a CD player. In this configuration, a subscriber's CD player can be played through the DCT 2000 to a stereo receiver. Figure 3-16 illustrates how to connect the RCA baseband auxiliary audio input/output on the DCT 2000:

Figure 3-16
CD player cabling



The DCT 2000 must be turned off from the front panel to enable audio loop-through signals to pass through. When the DCT 2000 is powered on, the audio outputs correspond with the currently tuned channel on the DCT 2000.

Dolby Digital Cabling Diagrams

The DCT 2000 can deliver Dolby AC-3 audio to a Dolby Digital stereo receiver using the SPDIF RCA connector. Because the SPDIF does not carry audio for analog channels, use both the baseband L/R audio and the SPDIF connectors when connecting the DCT 2000 to a digital receiver.

PCM audio and AC-3 are the operation modes for the SPDIF connector. PCM audio mode is the default setting from the factory. Use the Electronic Program Guide (EPG) to select an alternative operating mode for the DCT 2000. If the EPG does not provide a PCM or AC-3 option, then the SPDIF port will default to PCM audio.

Table 3-1 describes the functionality of the audio ports based on the digital audio mode selected:

Table 3-1
Audio port functionality

Digital Audio Mode	PCM Mode	AC-3 Mode
Left/Right RCA ports	Audio for digital and analog channels	Audio for analog channels only
SPDIF RCA port	PCM audio (Audio on digital channels only)	Dolby AC-3 (Audio on digital channels only)

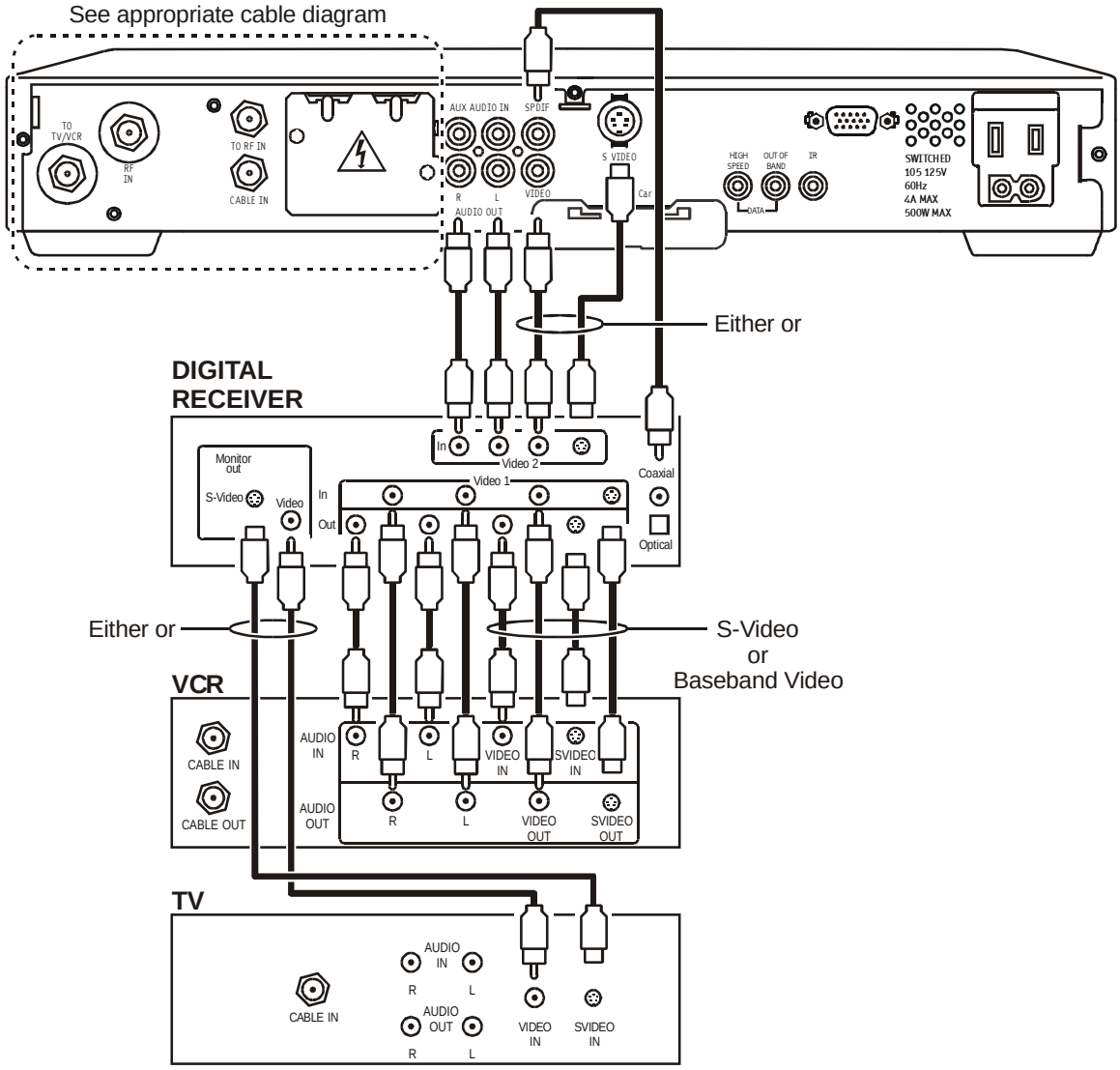
For normal viewing:

1. Set the DCT 2000 to PCM audio mode using the Electronic Program Guide.
2. Adjust the Dolby Digital receiver input audio settings for the DCT 2000 to baseband L/R inputs (refer to stereo receiver instructions for more information). This prevents audio loss while channel surfing through analog channels.
3. When a digital program has been selected for viewing, set the DCT 2000 to AC-3 mode using the EPG. Set the stereo receiver to digital audio input to experience AC-3 audio.

Many Dolby Digital receivers are designed with A/V output ports that feed external devices such as a VCR. The AV output content is based on the selected input device. If the DCT 2000 is selected as the input device for VCR recording, an alternate device cannot simultaneously use the Dolby Digital receiver, or the VCR will then record the secondary device. (Reference the Dolby Digital receiver installation manual for information on selecting and configuring A/V interfaces on the receiver).

Using this configuration the audio/video signals are passed through the digital receiver to enable the VCR record and playback features. Figure 3-17 illustrates audio/video connections for a Dolby Digital receiver:

Figure 3-17
Audio through Stereo Receiver



Operational Check

The operational check tests the communication link between the remote control and the DCT 2000. The procedures verify the DCT 2000 response to remote control commands. Table 3-2 lists the operational check procedures:

Table 3-2
Operational check

Feature	Testing Procedure
Power on	▪ Press POWER to turn on the DCT 2000.
	▪ Turn on the TV and tune it to the output channel of the DCT 2000 (channel 3 or 4).
Channel Selection	▪ Scan through the channels using the CHANNEL ▲ ▼ keys on the DCT 2000 and the CHANNEL + - keys on the remote control.
	▪ Tune to several channels by entering the channel number with the numeric keys on the remote control.
Volume Control	▪ Use the TV volume control to adjust the sound volume to a moderate level.
	▪ Press VOLUME + - on the remote control to increase the volume to its upper limit, lowest level, and to a comfortable level.
	▪ Press MUTE to turn the sound completely off. Press MUTE again to restore the sound.

If the DCT 2000 does not operate properly, refer to Section 5, “Troubleshooting.”

Section 4

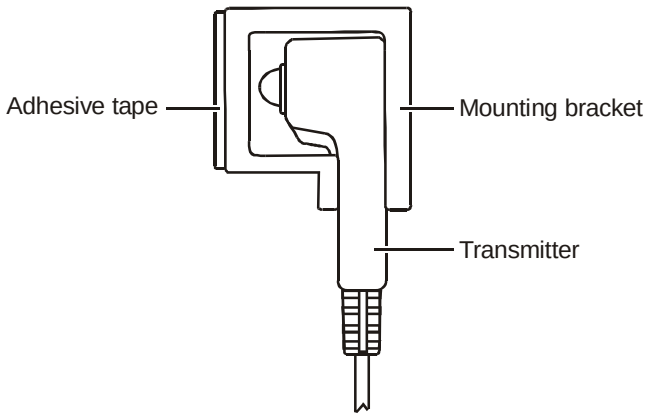
Adding the IR Blaster Option

The IR Blaster provides control of the subscriber's VCR from the DCT 2000. It consists of a low-power infrared transmitter attached to a six-foot cord and a mounting bracket. The mounting bracket is a clear plastic holder with a pad of adhesive tape for installing the IR Blaster near the VCR IR receiver. A mini-pin connector at the end of the cord connects the IR Blaster to the DCT 2000.

The IR Blaster functionality is controlled by the interactive program application that is resident on the DCT 2000. Not all applications support the optional IR Blaster.

Figure 4-1 illustrates the IR transmitter installed in the mounting bracket:

Figure 4-1
IR transmitter installed in mounting bracket



The IR Blaster is automatically activated through the electronic program guide. Individual VCR codes are broadcast through the out-of-band data channel and are updated periodically as new codes are added.

The procedure for installing the IR Blaster is described in the following paragraphs.

Locating the IR Receiver on the VCR

The IR receiver is not visible on some VCRs. You can locate the receiver using the following procedure:

1. Obtain a piece of opaque material, such as a 3- by 5-inch index card.
2. Use the card to block areas of the VCR where the receiver might be located. Turn the VCR on and off, while pointing the remote control at the card blocking the VCR. Be sure the remote control is close to the VCR to reduce reflections the receiver may pick up.
3. Note the area where the VCR is unresponsive to the remote control. This region contains the receiver and can be marked by loosely taping the index card to the area.

Because the IR Blaster radiates an area approximately 40 degrees wide, it is not necessary to be precisely on target with the remote control. Offset the location of the IR Blaster transmitters from the VCR receiver to reduce interference with operation of the VCR remote control.

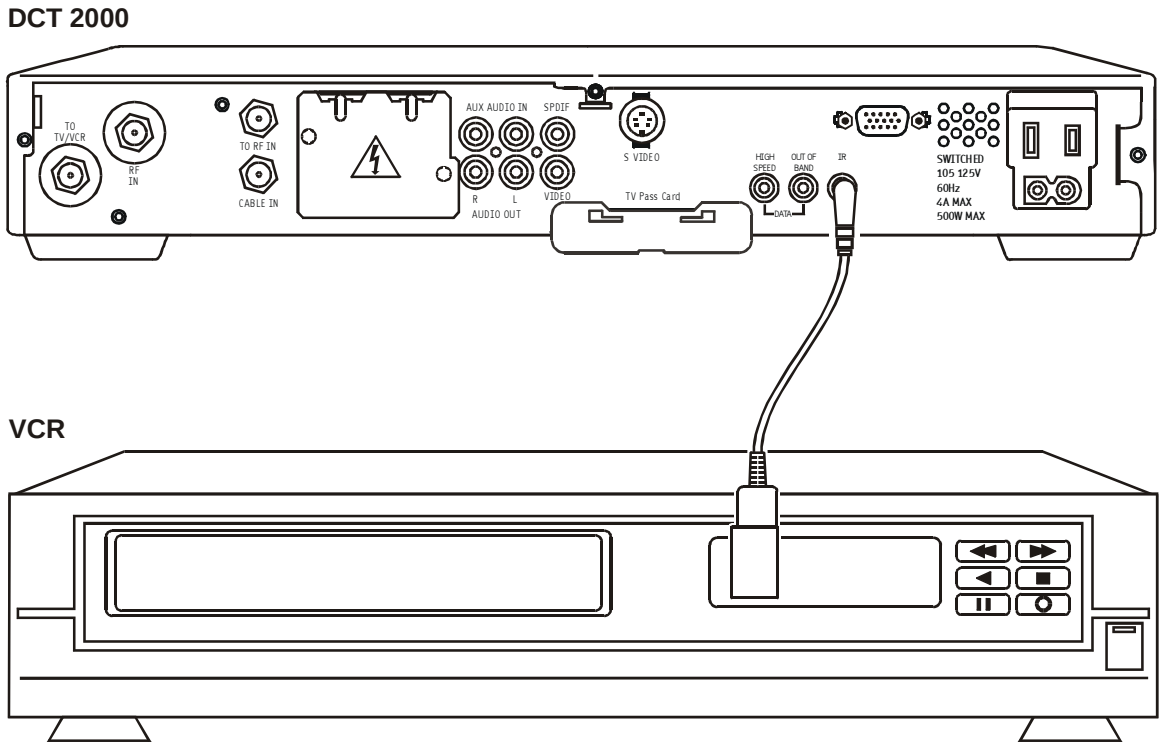
Installing the IR Blaster

To install the IR Blaster:

1 Fit the transmitter into the mounting bracket (refer to Figure 4-1).

2 Plug the mini-pin connector into the IR jack on the rear panel of the DCT 2000 rear panel (refer to Figure 4-2).

Figure 4-2
IR Blaster installed



3 Remove the adhesive tape cover from the mounting bracket.

4 Position the IR receiver off center of the VCR receiver and then press firmly attaching the mounting bracket on the VCR. Be careful to route the wire so that it does not prevent loading videotapes.

Checking the Installation

The IR Blaster is now located near the receiver and the VCR can be controlled through the DCT 2000. As a final check, operate the VCR using the remote control from various positions in the room. If the IR Blaster is obstructing the IR receiver on the VCR, move it slightly.

Section 5

Troubleshooting

This section provides information to assist you in quickly detecting, isolating, and resolving error conditions that might occur when using the DCT 2000. If you need assistance, call TRC at 1-888-944-HELP (1-888-944-4357).

Table 5-1 is a list of possible problems and solutions:

Table 5-1
Troubleshooting guidelines

Problem	Possible Solution
No power to the DCT 2000	Check the power outlet for AC power.
	Be sure the TV is tuned to the output channel of the DCT 2000 (channel 3 or 4).
	Verify that cable connections are correct from the TV set or monitor to the DCT 2000.
	Check that the power cord is properly plugged into the outlet and DCT 2000.
Remote control is not responding	Check for an obstruction between the remote control and the DCT 2000. Aim the remote control directly at the DCT 2000, not the TV or VCR.
	Be sure you firmly and deliberately press and release operation keys one at a time.
	Verify that channels can be changed using the keys on the front panel and then check that the batteries have been installed properly. Replace with new batteries if necessary.
	Check that the DCT 2000 has been initialized correctly, refer to Diagnostics.
The DCT 2000 is not receiving a cable signal	Check the cable connections and hand-tighten if necessary.
	Verify that the cable connections are correct.
	Verify the TV is working and has a clear picture.
Guide has no data	Unplug the power to the DCT 2000 and plug in the unit again. Wait for the DCT 2000 to collect the data.
VCR did not record	Turn the VCR off when you are not using it.
	Be sure the IR Blaster is correctly placed.
	Check the Scheduled Events list to be sure programs are scheduled for recording.

Appendix A

Specifications

Input frequency	54 through 860 MHz (excluding data carrier frequency)
HRC/IRC frequency assignments	Downloadable
Number of channels	136 carriers per cable, 1 or 2 cables
Analog	1 channel per carrier
Digital	More than 1 channel per carrier, content dependent
Dual A/B cable switching	Optional A/B (field upgradeable)
Input analog video level	0 dBmV through +15 dBmV
Input analog sound level	–17 dBmV through +2 dBmV
Average digital input level	–10 dBmV through +5 dBmV
Data carrier	QPSK-modulated carrier
Frequency	75.250 MHz or 72.75 MHz or 104.2 MHz
Bandwidth	1.5 MHz
Level	–10 dBmV through +5 dBmV
Video s/n	49 dB @ 0 dBmV input level
Output frequency accuracy	±150 kHz
Return loss	
Input	6 dB minimum
Output	8 dB minimum
Spurious output	–57 dBc maximum, in band
Cross-modulation distortion	–56 dB (136 channels, each @ +15 dBmV)
Composite second order distortion	–57 dB (136 channels, each @ +15 dBmV)
Second order distortion	–60 dB (136 channels, each @ +15 dBmV)
Composite triple beat distortion	–57 dB (136 channels, each @ +15 dBmV)
Set-top input beats (with all input signals)	–25 dB (136 channels, each @ +15 dBmV)
Hum modulation distortion	3 IRE
Output level	10 through 15 dBmV
Isolation (input/output)	70 dB minimum
Differential phase	10 degrees (maximum)
Analog descrambling method (optional)	Gated sync suppression or dynamic gated sync suppression, video inversion, audio privacy, and Hamlin compatibility
On-screen display (OSD)	
Screen size	352 x 480 pixels (configuration dependent)
Message/barker capacity	Up to 40 pages (configuration dependent)
Mechanical security	Standard: security screws, unichassis construction

Operating environment range	
Temperature	0° through 40°C (32° through 104°F)
Humidity	5 through 95% (noncondensing)
ac voltage	105 through 125, 60 Hz
Power dissipation	35 W at 115 Vac
Surge protection	Provided on power supply and RF ports
Size	17.13 × 13.25 × 2.75 inches
Weight	8.6 pounds

Appendix B

Diagnostics

This section describes the diagnostics designed to confirm proper installation of the DCT 2000. The diagnostics include checking error states and signal integrity, as well as provisions to identify the DCT 2000 on the network and to verify communications with the headend. The diagnostic information is displayed on the front-panel LEDs and the On-Screen-Display.

For diagnostics provided in this appendix:

- All indicators are in decimal notation unless otherwise noted.
- All signal-level and quality indicators are based on a 0 to 100% scale, unless otherwise noted.
- All screens self-refresh at a minimum rate of once every five seconds.
- All sample displays are illustrative; actual data will differ from the examples.

Accessing Diagnostics

To access the DCT 2000 diagnostic mode:

1. Press POWER to turn on the DCT 2000.
2. Wait five seconds.
3. Press POWER to turn off the DCT 2000.
4. Press SELECT within two seconds. The DIAGNOSTICS Main menu (Figure B-1) is displayed on the OSD and `d 01` is displayed on the front-panel LEDs. The DCT 2000 is now in diagnostic mode.
5. Use the CHANNEL ▲ ▼ keys to select the desired diagnostic.
6. Press CURSOR <, CURSOR >, SELECT, or ENTER to execute the selected diagnostic.
7. To exit the diagnostic mode, press POWER. The DCT 2000 exits the diagnostic mode and powers off.

Navigating the Diagnostics

Figure B-1 illustrates the OSD DIAGNOSTICS Main menu:

Figure B-1
DIAGNOSTICS Main menu – OSD

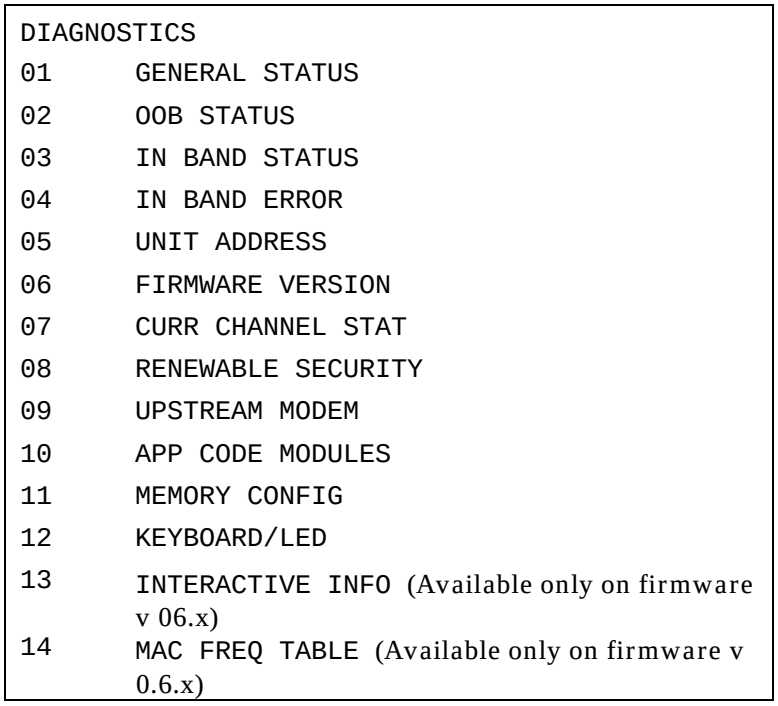


Table B-1 provides a list of keys and key functions for selecting diagnostics:

Table B-1
Operational keys using the DIAGNOSTICS Main menu or submenus

Key	Key function using the DIAGNOSTICS Main menu	Key function using a diagnostic
POWER	DCT 2000 exits the diagnostic mode and enters the OFF state	DCT 2000 exits the diagnostic mode and enters the Off state
CH/CUR +, CURSOR UP	Moves the cursor up	Displays the DIAGNOSTICS Main menu
CH/CUR - , CURSOR DOWN	Moves the cursor down	Displays the DIAGNOSTICS Main menu
CURSOR RIGHT, CURSOR LEFT, SELECT, ENTER	The DCT 2000 executes the selected diagnostic	Displays the DIAGNOSTICS Main menu
INFO, GUIDE	No function	No function

Table B-2 lists the LED and provides a description of each diagnostic. It also indicates whether the diagnostic provides information on the LED/OSD:

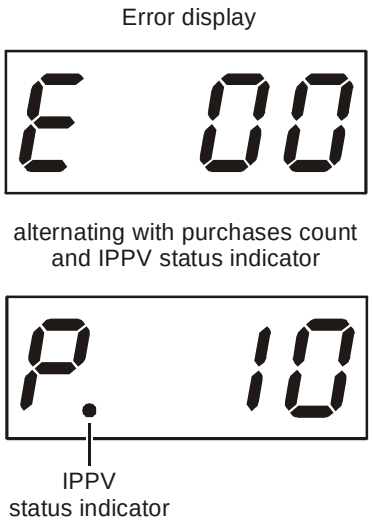
Table B-2
Diagnostic

LED	Diagnostic	LED	OSD
d 01	General status of the DCT 2000	X	X
d 02	QPSK out-of-band receiver status	X	X
d 03	In-band receiver status	X	X
d 04	In-band error count	X	X
d 05	Unit address	X	X
d 06	Firmware version	X	X
d 07	Channel status	X	X
d 08	Renewable security system	X	X
d 09	Upstream modem status	X	X
d 10	Application code modules	X	X
d 11	Memory configuration		X
d 12	Keyboard and LED diagnostic	X	X
d-13	Interactive info		X
d 14	MAC frequency table	X	X

d 01: DCT 2000 General Status

This diagnostic indicates the general status of the DCT 2000. Figure B-2 illustrates the LEDs, which alternate between the error code and the purchases count:

Figure B-2
DCT 2000 general status – LEDs



The purchases count is used by Customer Service Representatives (CSRs) to check returned DCT 2000 for uncollected purchases, that are used to close out a subscriber's account. The largest error code takes priority.

Figure B-3 illustrates the DCT 2000 STATUS OSD, which displays the error code, a short description of the error, the purchases count, and specific model information:

Figure B-3
DCT 2000 STATUS – OSD

```
DCT 2000 STATUS
ERROR:           E 00
NO ERROR
PURCHASES        10

Platform ID:
Family ID:
Model ID:
TUNER:           V860
Remod Channel:   3
```

Table B-3 lists the error codes:

Table B-3
Error codes

Initialization status errors

Error Code	OSD	Cause	Remedy
E 00*	NO ERROR	Indicates normal condition after initialization	Not applicable
E 01*	NOT CONNECTED	DCT 2000 did not receive a connect message	Send a connect message Restore out-of-band signal
E 02	PWR CYCLE	Init Error	Box needs a Power Cycle to recover
E 03	DRAM	DRAM error	Not used at this time
E 04	DPSRAM	DP-SRAM error	Not used at this time
E 07	ROM	ROM verification failure	Power cycle box; if repetitive, return for repair
E 08	RAM	Faulty RAM, ROM, EEPROM, or POST failure (this is a hardware failure)	Return DCT 2000 for repair
E 09	BATTERY	Dead battery or memory has not been initialized; occurs if battery fails to keep the RAM alive during power-down; causes DCT 2000 to be disconnected	Return DCT 2000 for repair; requires factory initialization message
E 10	SERIALNO	Invalid serial number	Not used at this time
E 11	UNIT ADDRESS	Invalid unit address	Return DCT 2000 for repair; requires a unit creation message
E 12	POST	POST failed	Not used at this time
E 13	BOOT	Sys_boot initialization failure	Power cycle box; if repetitive, return for repair
E 14	STARTUP	DCT 2000 system startup failure	Power cycle box; if repetitive, return for repair
E 15	TSI INVALID	TSI structure is corrupted	Power cycle box; if repetitive, return for repair
E 16	FLASH BAD NUMBER	Bad flash number specified for InitiateFlashPlatform	Error logged, ignore
E 17	BAD PLATVAL	Bad platform validation step number	Error logged, ignore

*E 00 and E 01 cannot be displayed while the DCT 2000 is off. The other errors will display on the LEDs when the DCT 2000 is off.

d 02: Out-of-Band Receiver Status

This diagnostic indicates the status of the out-of-band control channel. Figure B-4 illustrates the out-of-band status LED display:

Figure B-4
Out-of-band status – LEDs

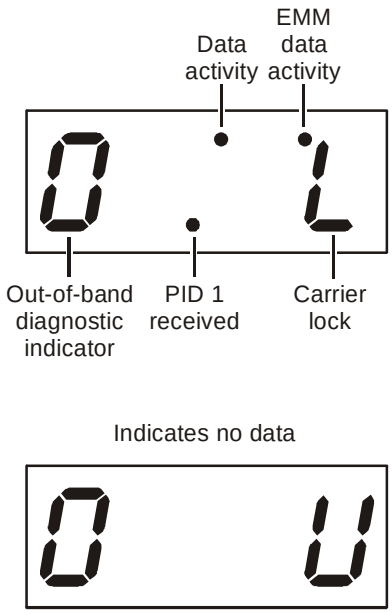


Figure B-5 illustrates the OOB DIAGNOSTIC (out-of-band status) OSD:

Figure B-5
OOB DIAGNOSTIC (out-of-band status) – OSD

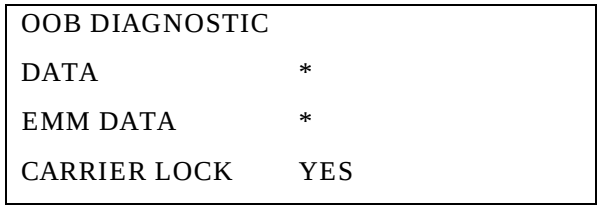


Table B-4 lists the LED and OSD indications of whether the out-of-band receiver is locked to the carrier (this indicator can falsely indicate locked):

Table B-4
LED and OSD indicators for out-of-band receiver state

LED	OSD	State
L	YES	Carrier locked
U	NO	Carrier unlocked

Data Activity and EMM Data Activity Indicators

The LED EMM Data Activity indicator is lit when a message is present and the Data Activity indicator shows receipt of a message. The OSD indicates with a *, that data has been received.

The indicators cover all packet processors regardless of which stream they are monitoring and are cleared when you enter the diagnostic.

Table B-5 lists how the EMM data activity indicator shows when the DCT 2000 is receiving a message on the EMM stream:

Table B-5
Out-of-band EMM data activity indicator – LED and OSD

LED	OSD	Status
off	Blank	No data received
on	*	Data received

The DCT 2000 can receive only six PIDs at one time. Data on PIDs can be present on the out-of-band multiplex that the DCT 2000 is not receiving.

d 03: In-Band Receiver Status

The DCT 2000 displays the in-band diagnostics for the last attempted channel tune. If a digital carrier is not present, the diagnostics indicate the carrier lock is analog. When the carrier lock is analog, all fields for digital, other than a carrier lock channel, are blank.

Figure B-6 illustrates the in-band receiver status as shown on the LED:

Figure B-6
In-band receiver digital status – LED

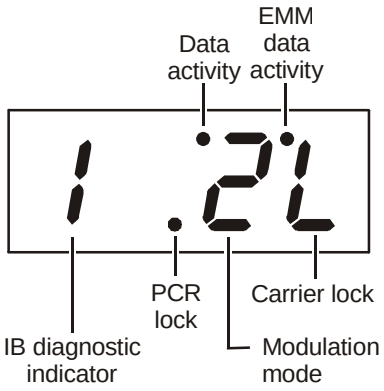


Figure B-7 illustrates the IN-BAND DIAGNOSTIC (in-band receiver digital status) OSD:

Figure B-7
IN-BAND DIAGNOSTIC (in-band receiver digital status) – OSD

IN-BAND DIAGNOSTIC		
DATA		*
EMM DATA		*
CARRIER LOCK		YES
PCR LOCK		YES
SNR	47	*ssss*
AGC	23	*ssss*

In-Band Data Activity Indicator – LED and OSD

The in-band data activity indicator lights when the DCT 2000 is receiving a message. The indicator is blank when you enter this diagnostic and three seconds after receiving the last message. The indicator covers all packet processors regardless of which stream they are monitoring.

Table B-6 lists the LED and OSD indications:

Table B-6
In-band data activity

LED	OSD	Status
off	blank	No data received
on	*	Data received

EMM Data Activity Indicator – LED and OSD

Table B-7 lists the LED and OSD indicator lights when the DCT 2000 is receiving a message on the EMM stream. The indicator is clear when entering this diagnostic.

Table B-7
EMM data activity indicator – LED and OSD

LED	OSD	Status
off	blank	No data received
on	*	Data received

Carrier Lock – LED and OSD

This diagnostic indicates that the digital in-band receiver is locked to the carrier.

Table B-8 lists the LED and OSD indications:

Table B-8
In-band carrier lock – LED and OSD

LED	OSD	Status
L	YES	Carrier locked
U	NO	Carrier unlocked
A	Analog	Analog channel

PCR Lock – OSD Only

The PCR lock indicates a program-clock-reference lock with the current digital datastream.

Signal-To-Noise Ratio (SNR) and Automatic Gain Control (AGC) – OSD Only

The SNR displayed on the OSD is a rough estimate of the carrier signal-to-noise ratio. The SNR displayed is a measure of the QAM cluster variance, which is proportional to the signal-to-noise ratio.

The AGC value roughly indicates the received signal level.

Analog channels display analog for carrier lock. The SNR and AGC display a number for the numeric value and blank for the ssss value. A blank display indicates that the digital section of the DCT 2000 is still in the initial state. If this occurs, check diagnostic d07.

Table B-9 lists the SNR and AGC indicators for the OSD:

Table B-9
SNR and AGC indicators – OSD only

ssss value	Meaning
GOOD	Good value
FAIR	Marginal signal level – check the signal
BAD	Unusable signal

d 04: In Band Error

The error count represents the number of uncorrectable errors in the digital multiplex. The QAM receiver must be locked to the signal before errors can be detected. A four-digit value of 0000 displayed on the LED indicates that there are no uncorrectable errors. The display shows the short-term error count and is updated every five seconds. The maximum count is 9999.

The long-term error count is a sum of the errors occurring over the last 24 hours of DCT 2000 operation. This data is maintained between channel changes and power cycles. This count is reset every 24 hours of DCT 2000 operation. The maximum is 9999 counts.

Figure B-8 shows the receiver status error count on the LEDs:

Figure B-8
In-band receiver status error count short term LEDs

When there is no carrier lock, the LEDs display four dashes (––––).

Figure B-9 shows the receiver status error count on the OSD:

Figure B-9
In-band receiver status error count short term OSD

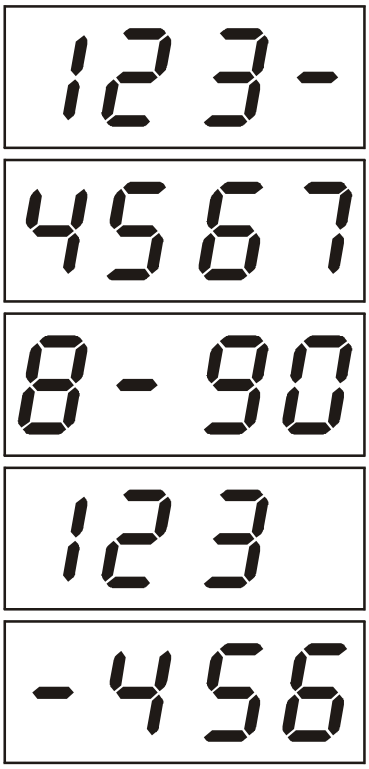
```
IN-BAND RCVR STATUS
SHORT-TERM ERROR COUNT
       3456

LONG TERM ERROR COUNT
       7890
```

When there is no carrier lock, the error count displays four dashes (––––).

d 05: Unit Address

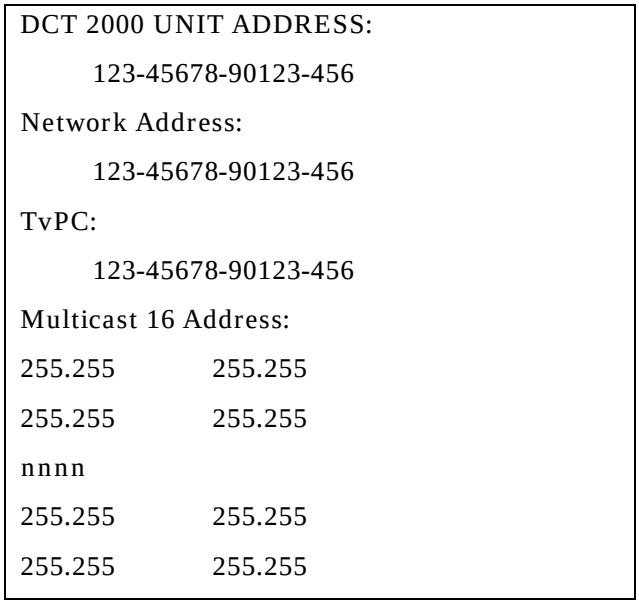
This diagnostic displays the 16-digit (40-bit) unit address of the DCT 2000. It displays in five parts on the four-section LED. The address display stays on each section for five seconds. The location of the dash in each of the five displays is unique. Figure B-10 shows the LEDs for unit address 123-45678-90123-456:

Figure B-10
Unit address LEDs



On the unit address OSD, the unit, network, and TV PassCard (TvPC) addresses are in decimal form (13 address digits and three check digits). The multicast 16-bit address is in TCP/IP decimal byte form. Figure B-11 illustrates the unit address OSD:

Figure B-11
Unit address OSD

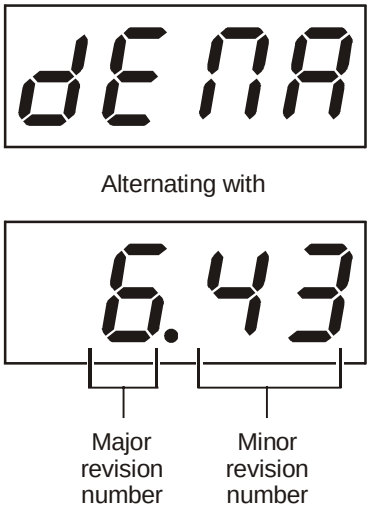


The value nnnn shown in Figure B-11 represents the following datastreams: DATA, VCN, POLL, NET, EMM, SCC, and DWLD. The Multicast 16 address numbers change to display the values for each datastream.

d 06: Firmware Version

This diagnostic displays dENA firmware version 06.xx. Figure B-12 illustrates that the LEDs alternate between displaying the firmware version number and the characters dENA:

Figure B-12
dENA firmware version LEDs



This menu option available only on 06.xx series firmware.

The dENA firmware version OSD displays the dENA firmware revision number, build date, CAMEL firmware version number, and TSODA firmware version number. Figure B-13 illustrates the dENA firmware version OSD:

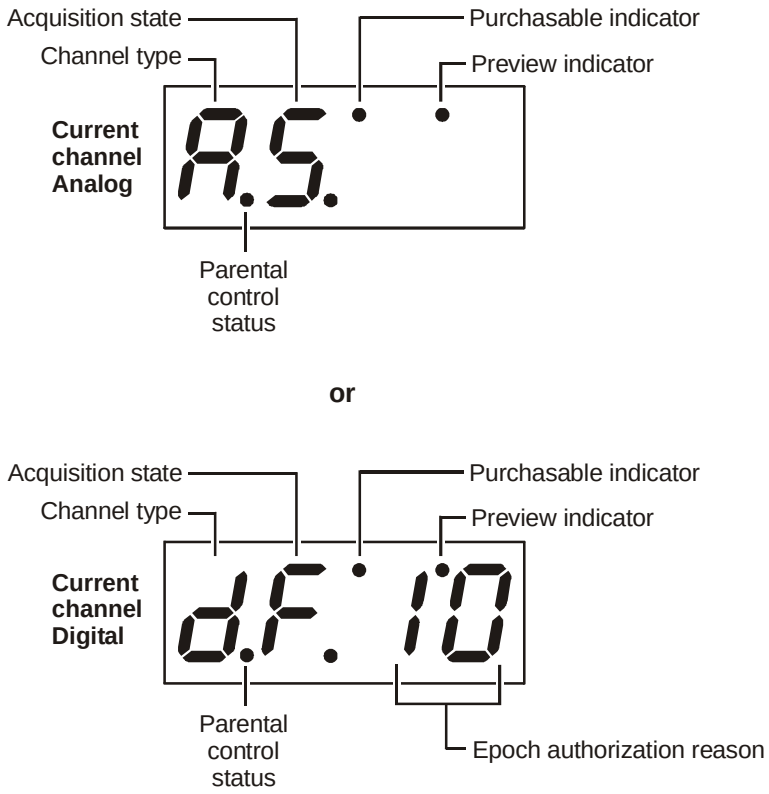
Figure B-13
dENA firmware version OSD

```
FIRMWARE VERSION
   06.43
   May 14, 1997
   08:13:54

TSODA       t14

CAMEL8404  (appears on firmware v06.xx)
```

d 07 Current-Channel Status

This diagnostic gives the instantaneous status of the last attempted channel tune on the in-band tuner. The status shows channel type (analog/digital), acquisition state, purchasable indicator, preview indicator, parental control status, and mute status. Figure B-14 illustrates a current channel status display on the LEDs:

Figure B-14
Current channel status LEDs



"dF 10" does not alternate with the virtual channel number.

LED Channel Types

Table B-10 lists the possible channel types:

Table B-10
Channel Types – LED and OSD

1st LED	OSD	Meaning
A	Analog	Analog channel
d	Digital	Digital channel

Acquisition States

Table B-11 lists the acquisition states:

Table B-11
Acquisition states

2nd LED	State
n	Not connected
I	Initialized to acquire the program
C	Configured to acquire the program
A	Acquiring the program
d	Not authorized for the program
S	Authorized for analog program
E	Authorized for encrypted digital program
U	Unencrypted digital program

Purchasable Indicator – LED and OSD

Table B-12 lists the purchases indicator:

Table B-12
Purchasable status – LED and OSD

LED	OSD	Meaning
off	NO	Channel is not purchasable at present
on	YES	Channel is purchasable at present

Preview Indicator – LED and OSD

Table B-13 lists the preview indicator:

Table B-13
Preview status – LED and OSD

LED	OSD	Meaning
off	NO	Channel is not in preview
on	YES	Channel is in preview

Current Channel Status OSD

The current channel status OSD has the following fields:

- The TYPE field indicates whether the current channel is analog or digital.
- The STATUS field indicates the current channel acquisition/authorization state.
- The *ddd* CONNECTED field indicates whether the DCT 2000 is connected or disconnected. If the value is connected, the program is viewable.
- The PARENT CONTROL field indicates whether the current channel is parentally controlled.
- The PURCHASABLE field indicates that the program can be purchased.
- The PURCHASED field indicates that the program has been bought.
- The PREVIEW field indicates that the program is in the free preview state.

Figure B-15 illustrates the current channel status display for analog channels on the OSD:

Figure B-15
CURRENT CHANNEL STATUS OSD for analog channel

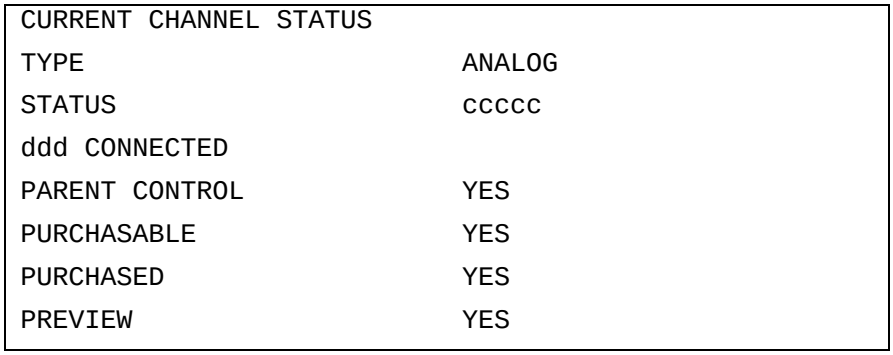
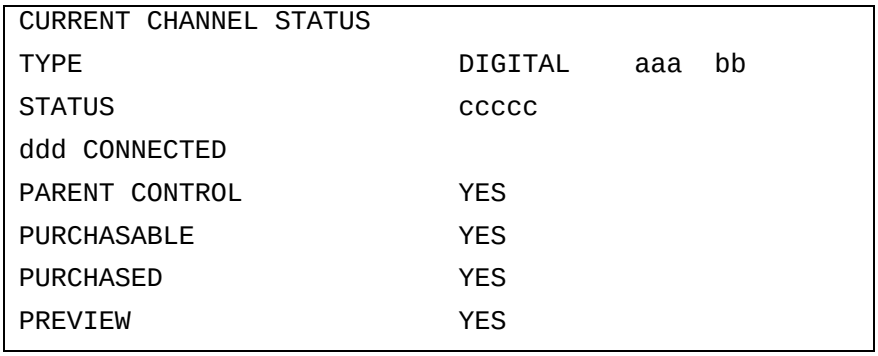


Figure B-16 illustrates the current channel status display for digital channels on the OSD:

Figure B-16
Current channel status OSD for digital channel



Current channel status – OSD fields

Table B-14 lists the current channel status OSD fields:

Table B-14
Current channel status – OSD fields

OSD variables	State
aaa	Analog – blank For digital only: ■ ENC – encrypted ■ UNE – unencrypted
bb	current epoch authorization reason in the current_epoch_auth_reason field. This is displayed in hex: 00 – missing program re-key 01 – missing working key epoch message 02 – missing event blackout message 03 – missing category rekey 04 – old category sequence in program, rekey message 10 – program bought 11 – program bought without taping 12 – subscribed with taping 13 – subscribed without taping 14 - subscribed with taping purchasable 15 – IPPV with taping 16 – IPPV without taping 20 – bad seed checksum 21 – bad debit buffer checksum 30 – IPPV not enabled 31 – insufficient credit to purchase 32 – show count limit exceeded 33 – debit register will overflow 34 – no AFP records available 36 – maximum package cost exceeded 37 – no IPPV overlay in message 40 – not subscribed 41 – regional blackout 42 – event blackout
ccccc	INIT – Initialized state CONFI – Configured ACQUI – Acquiring the program AUTH – Authorized for the program Not A – Not authorized for the program
ddd	blank – Connected NOT – Not connected

d 08: Renewable Security System

The renewable security system includes a TvPC card that returns the security status to current. The status LED includes whether the TvPC is required, the mode, status, and version.

Figure B-17 illustrates the renewable security status LEDs:

Figure B-17
Renewable security status LEDs

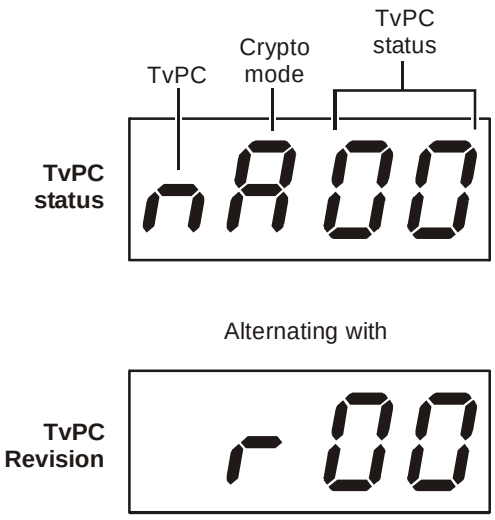


Figure B-18 illustrates the RENEWABLE SECURITY OSD:

Figure B-18
RENEWABLE SECURITY – OSD

```
RENEWABLE SECURITY
SYSTEM STATUS
TvPC NOT REQUIRED
CRYPTO:       STAND ALONE
STATUS:       00
VERSION:      00
```

TvPC Required – LED and OSD

Table B-15 shows how the LED and OSD indicate whether further operation of the DCT 2000 requires the TvPC:

Table B-15
TvPC required

LED	OSD	Status
n	NOT REQUIRED	TvPC not required
Y	IS REQUIRED	TvPC is required

Current Mode

Table B-16 lists the current mode as displayed on the LED and the OSD:

Table B-16
Current mode

LED	OSD	Status
A	STAND ALONE	Stand alone
S	SUPPORT	Support
n	NOT MATED	Not mated

TvPC Status

Table B-17 shows the TvPC status as displayed on the LEDs and the OSD:

Table B-17
TvPC status

LEDs and OSD	Status
00	OK
01	TvPC communication problem
02	TvPC required
03	Validator does not match between GK and TvPC
04	Invalid unit key number
05	Old TvPC unit address
0a	TvPC not mated
0b	TvPC/base module unit address mismatch
0C	New TvPC, but wrong version number
0d	TvPC unit address mismatch

d 09: Upstream Modem Status

These diagnostics display the appropriate set of STARVUE II (RF) and STARFONE (telephone) modem information based on the module installed in the DCT 2000.

STARVUE II (RF) Diagnostics

This diagnostic shows the status and operating parameters for the STARVUE II RF return. See Tables B-18 and B-19 for testing the parameters. Figure B-19 illustrates the STARVUE II diagnostics LEDs:

Figure B-19
STARVUE II diagnostics LEDs

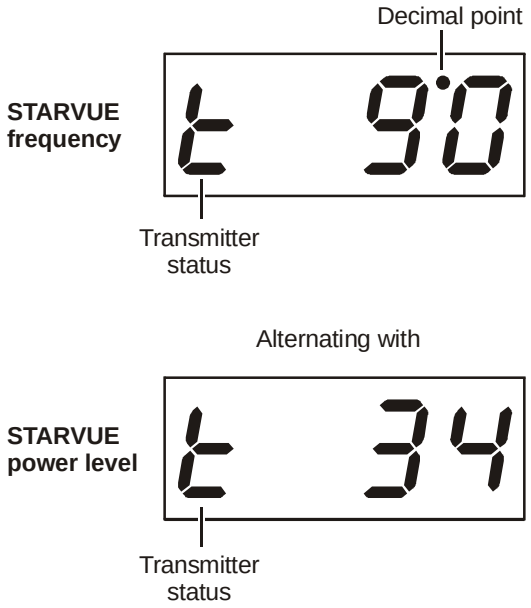


Figure B-20 illustrates the STARVUE II DIAGNOSTICS OSD:

Figure B-20
STARVUE II DIAGNOSTICS OSD

STARVUE II DIAGNOSTICS	
STATUS	t
FREQUENCY	9.0 MHz
LEVEL	34
IPPV	DISABLED

The Level field indicates the approximate power value of the STARVUE II transmitter in dBmV. The difference between the power value on the diagnostic screen and the actual power of the STARVUE II module is ± 5 dBmV.

Table B-18 lists the STARVUE II transmitter status:

Table B-18
STARVUE II transmitter status

LED and OSD	Indicator
-	Idle
t	Transmitting

Table B-19 shows how the LED and OSD indicate the IPPV status:

Table B-19
STARVUE II IPPV status

LED	OSD	Mode
on	ENABLED	IPPV enabled
flashing	UNSENT – ##	The DCT 2000 contains unsent IPPV transactions
off	DISABLED	IPPV disabled

The variable –## is the number of unsent transactions.

STARFONE Diagnostics

This diagnostic shows the status and operating parameters for the STARFONE module. Figure B-21 illustrate the STARFONE diagnostics LEDs:

Figure B-21
STARFONE diagnostics LEDs

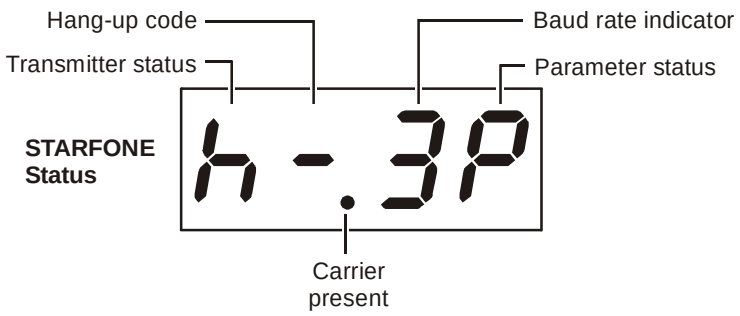


Figure B-22 illustrates the STARFONE DIAGNOSTICS OSD:

Figure B-22
STARFONE DIAGNOSTICS OSD

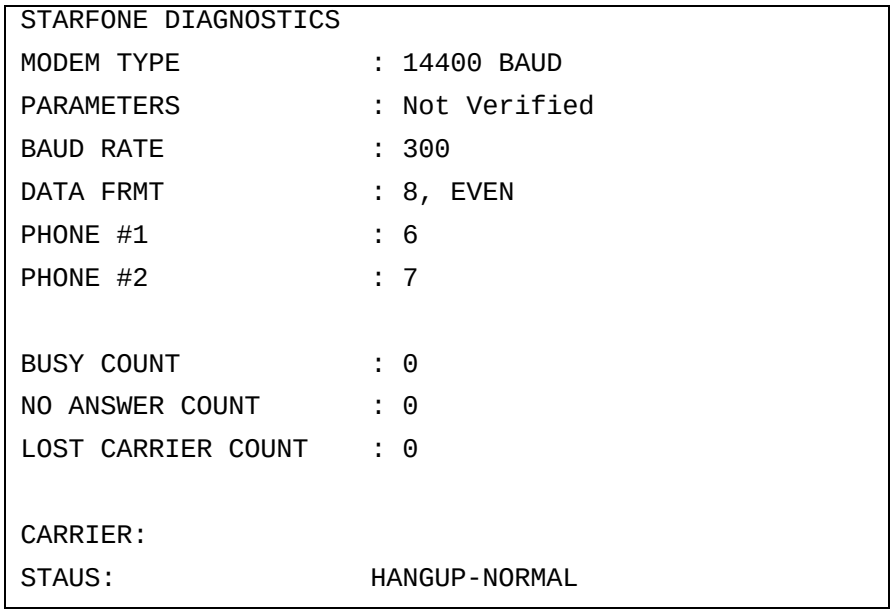


Table B-20 lists the STARFONE transmitter status:

Table B-20
STARFONE transmitter status

1st Digit	2nd Digit	Meaning
h	*	On hook (* = hang-up code)
t	–	Test for line available
d	–	Dialing
A	–	Waiting for answer
c	**r**	Communicating, receiving
c	**t**	Communicating, transmitting
c	–	Communicating, idle
r	*	Waiting for retry (* = hang-up code)

Table B-21 lists the STARFONE hang-up code:

Table B-21
STARFONE hang-up code

Mode	Status
–	Normal hang-up
A	Answer time-out
r	Phone ringing
c	Carrier loss
L	Line in use
E	Errors (data)
U	User line request
P	Parameters invalid
t	Data timeout
C	Communication protocol fault

Table B-22 lists the IPPV status indicator:

Table B-22
STARFONE IPPV status

LED	OSD	Mode
on	**ENABLED**	IPPV enabled
flashing	**UNSENT**	This DCT 2000 contains unsent IPPV transactions
off	**DISABLED**	IPPV disabled

Table B-23 lists the STARFONE third-digit baud rate:

Table B-23
STARFONE third-digit baud rate

LED	OSD	Mode
3	**300**	300 Baud

Table B-24 lists the STARFONE fourth-digit telephone parameters:

Table B-24
STARFONE fourth-digit telephone parameters

LED	OSD	Mode
—	**NOT SET**	Telephone parameters not set
P (flashing)	**NOT VALID**	Telephone parameters not valid
P (solid)	**SET**	Telephone parameters OK

d 10: Application Code Modules

This diagnostic displays the currently downloaded code modules. This can be a multi-page display. Press SELECT to display additional pages. The LEDs show the downloaded status.

The LED diagnostic indicates the current download status. The data received indicator lights when downloaded data is received. The download packet counter counts down toward zero, indicating the remaining packets of the current module to be received. This counter will initially be blank, and after segment zero is received it shows the remaining packets. The data received indicator can be lit even if no additional packets are stored.

Figures B-23 and B-24 illustrate the application code module for LEDs and OSDs:

Figure B-23
Application code module LEDs

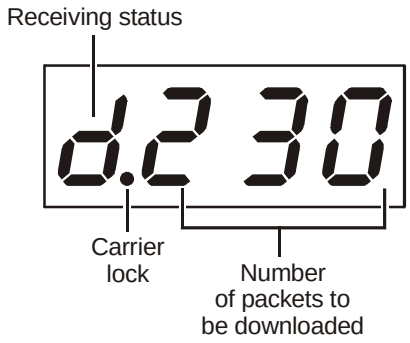


Table B-25 lists the mode for the first LED that indicates the current status of the download:

Table B-25
First LED indicating current status of download

First LED	Mode
I	Idle – no download in progress
C	Connected to download PID – awaiting data
d	Download in progress

Figure B-24
APP. (application) CODE MODULES OSD

```
APP. CODE MODULES
MODULE              VER                 STATUS

DCT_ROM             01.00               DISABLD
dct_plat            01.00               ENABLED
appl_____            2.00               DOWNLD
```

d 11: Memory Status

The memory-free value is the sum of all free memory. This free memory is not necessarily in one free block. There is no LED for this diagnostic. The format of the OSD depends on the installed memory types.

Figure B-25 illustrates the MEMORY STATUS OSD:

Figure B-25
MEMORY STATUS OSD

```
MEMORY STATUS
APPLICATION

NVMEM                   384 K
DRAM                    768 K

PLATFORM

ROM                     512 K
NVMEM                   1024 K
DRAM                    256 K
FLASH                   1 M
```

d 12: Keyboard Diagnostics

This diagnostic is used to verify the functionality of the LEDs and front-panel keys.

This LED diagnostic indicates the currently pressed key. One segment on each row is lit corresponding to the front-panel key.

Figure B-26 illustrates the keyboard diagnostic OSD:

Figure B-26
Keyboard diagnostic – OSD

```
G  <  >  V  ►  I  M  S  B  -  +  P
```

Each character is highlighted while the front panel key is held. Press any key on the remote control to exit the keyboard diagnostic and display the Main menus.

d 13: Interactive Info – OSD

The INTERACTIVE INFO menu is a diagnostic tool used to gather information about your system. Figure B-27 illustrates the OSD of the INTERACTIVE INFO menu:

Figure B-27
INTERACTIVE INFO menu

```
INTERACTIVE INFO
IP:        0.0.0.0
UPM:       0X000000
UPSTREAM ID:        0X0000
DOWNSTREAM ID:      0X0000
STATE:    UNCONFIG
MAC ABORT CNTR:     0000

GOOD PACKETS:
ERROR PACKETS:

SOCKET PORT STATE
0              UNUSED
1              UNUSED
2              UNUSED
3              UNUSED
4              UNUSED
```

d 14: MAC Frequency - OSD

The DCT 2000 uses a range of frequencies set by the host for upstream communications. Figure B-28 is an example of the OSD MAC FREQUENCY TABLE that will display your frequency and power wattage:

Figure B-28
MAC FREQUENCY TABLE

```
MAC FREQUENCY TABLE
FREQ           POWER
```

Abbreviations and Acronyms

CSR	Customer Service Representative
DCT 2000	Digital Consumer Terminal 2000
EMM	entitlement management message(s)
HRC	harmonically related carriers
IPG	interactive program guide
IPPV	Impulse Pay-Per-View
IR Blaster	Infrared Blaster
IRC	incrementally related carriers
MPAA	Motion Picture Advisory Association
NVOD	Near Video on Demand
NVRAM	Non-volatile random-access memory
OSD	on-screen display
PCR	program clock reference
PID	packet identifier
PPV	Pay-Per-View
QAM	quadrature amplitude modulation
QPSK	quadrature phase shift keying
RSA	Return for Service Authorization
TCP/IP	Transmission Control Protocol/Internet Protocol
TRC	Technical Response Center
TvPC	TV PassCard
VOD	Video on Demand

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